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CONTENTS AND SUBJECT INDEX

The Physician and Tuberculosis. J. Arthur Myers, M.D., Minneapolis 189

Convulsions in Childhood: A Review of One Thousand Cases. M. G. Peterman, M.D., Milwaukee...194

Discussed by Drs. Helmholz, Cooder, Sweet and Peterman.

Protamine and Allergy: I. Nature of the Local Reactions After Injections of Protamine Zinc Insulin; II. Induction of Sensitivity to Insulin by Injections of Protamine Zinc Insulin. Richard A. Kern, M.D., and Paul H. Langner Jr., M.D., Philadelphia.....198

Chronic Brucellosis in Charlotte, N. C.: Report of Cases. Frank H. Robinson, M.D., and Alice C. Evans, M.D., Washington.....201

Western Equine Encephalomyelitis in Laboratory Worker. L. D. Fothergill, M.D.; Margaret Holden, Ph.D., and R. W. G. Wyckoff, Ph.D., Pearl River, N. Y.....206

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

Late Marginal Ulcer. Jerome Selinger, M.D., New York.....207

Cerebellar Tumor with Acute Respiratory Paralysis: Removal of Tumor and Recovery. D. H. Werden, M.D., San Diego, Calif...207

SPECIAL CLINICAL ARTICLE

Strictures and Injuries of Bile Ducts: A Study of Results of Operations in Eighty Cases. Waltman Walters, M.D., Rochester, Minn.....209

COUNCIL ON PHARMACY AND CHEMISTRY 213

Rectal Irritation Following the Use of Mercurial Diuretics in Suppository Form. Arthur C. DeGraff, M.D.; Max Cowett, M.D., and Robert C. Batterman, M.D., New York 214

COUNCIL ON FOODS 215

SPECIAL ARTICLE

The Case of Asa Brunson versus Morris Fishbein.....217

EDITORIALS

Gas Gangrene in Civil Life.....234

Non-Peruvian Verruga.....235

The Consumer Trend.....235

CURRENT COMMENT

A Nonspecific Factor in Resistance 236

BUREAU OF LEGAL MEDICINE AND LEGISLATION 257

(Subject Index on next page)

ORGANIZATION SECTION

Graduate Medical Education:

District of Columbia.....237

North Dakota.....237

Medical Legislation.....238

Woman's Auxiliary.....238

A.M.A. Session . NEW YORK . June 10-14, 1940

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SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "Ml," Medicolegal; "ME," Medical Economics; "OS," Organization Section; "SS," Student Section.

Abortion, habitual, progestin for....ab-266
infectious, in cattle....246
legislation....244; 247
Allergy and protamine....*198
antirabic treatment and....ab-260
theories of eclampsia....ab-271
Allison, Nathaniel, memorial....241
Amenorrhea, sex-endocrine products for..ab-266
American School Health Association, tuberculosis committte data....253
Anemia, pernicious, erythrocyte formation.ab-274
Angina, agranulocytic, blood in....ab-265
agranulocytic, treatment; mortality....ab-264
Vincent's, hematopoietic response....ab-265
Appendicitis, ruptured, gas gangrene antiserum in....253
Appetite, anorexia nervosa mistaken for Simmonds' disease....244
Arthritis, sinuses as infection foci....ab-262
Ascariasis, treatment, hexylresorcinol....252
Astroblastoma, cerebellar, with acute respiratory paralysis....*207
Aviation, prepare for air raid casualties....244
Bang's Disease in cattle....246
Best, Charles H., Mickle award to....243
Better Business Bureaus conference....E-235
Bile Ducts, strictures; injuries....*209
Bladder calculi from sulfapyridine....C-250
cancer, radium treatment....ab-269
Blood circulatory effects of injecting dextrose or sucrose....ab-259
circulatory factor in resistance....E-236
diseases, laryngologic aspect....ab-265
lipases in tuberculosis....ab-271
platelets in health, hemophilia, during menstruation....ab-263
potassium and calcium in insulin shock.ab-268
pressure, high, and cranial hypertension.ab-269
sedimentation in otitis media....ab-262
transfusion for x-ray burns....246
Board Examinations....254
Bone Marrow in mycosis fungoides....ab-270
Book Notices....255
Books Received....Adv. page 28
Brain injuries (birth) cause of convulsions.*194
potential changes induced by metrazol..ab-267
softening or hemorrhage, neutrophilic leukocytes in spinal fluid....ab-261
Breast, estrogen action on, dependent on pituitary and diencephalon....ab-272
Brunson, Asa, vs. Morris Fishbein....217
Building, disinfecting....251
Bureau of Legal Medicine and Legislation..257
Cancer diagnosis, crystallographic....ab-273
diagnosis, Elsasser-Wallace rabbit test....252
research, fund for, Minn....241
Cataract and vitamin C deficiency....ab-261
Cerebellum tumor; respiratory paralysis....*207
Cerebrospinal Fluid, neutrophilic leukocytes in brain hemorrhage....ab-261
reverse Queckenstedt test for spinal block.253
Chancre, early, of tonsils....ab-271
Clavicle sign of congenital syphilis....ab-267
Consumer trend....E-235
Convulsions in childhood....*194
Correspondence....250
Council on Foods....215
Council on Pharmacy and Chemistry....213
Criminal, please watch for....243
Crippled children, clinic for, N. H....241
Deaths....248
Dementia Praecox, serum potassium and calcium in insulin shock....ab-268
brain potential changes after metrazol..ab-267
Dermatitis from deodorants?....253
Dermatomyositis, postvaccinal....ab-262
Dextrose injection, circulatory effect....ab-259
Diabetes Mellitus, protamine zinc insulin in, local reactions to....*198
Dysmenorrhea, sex-endocrine products for.ab-266
Dystrophy, myotonic, heredity....ab-260
Ear disease, encephalitis from....ab-264
Eclampsia, allergic theories....ab-271
Elsasser-Wallace rabbit test for cancer....252
Encephalitis with antirabic treatment....ab-260
otogenic nonsuppurative....ab-264
Encephalomyelitis, equine, fatal in laboratory worker....*206
Epilepsy, convulsions in childhood....*194
Erythrocytes formation in anemia....ab-274
Estrogen, action on breast dependent on pituitary and diencephalon....ab-272
clinical uses....ab-266
effect of combining wheat germ oil with.ab-273
Eye, aging, and vitamin C....ab-261
Failla, G., Janeway Medal to....243
Fishbein, Morris, Brunson's libel suit against.217
Fistula, biliary, establishing, in bile duct strictures and injuries....*209
Fluorides toxicity; Gettler-Ellerbrook test..ab-260
Foreign Letters....244
Foundations, assets of....243
Fruit, canned, vitamin and mineral content.215
Gallbladder surgery, bile duct strictures and injuries....*209
Gangrene, gas, in civil life....E-234
gas, antiserum, in ruptured appendicitis..253
Goiter exophthalmic, psychosis in....ab-273
Goldblatt, Harry, Alvarenga prize to....242
Gonadotropic Principles, clinical uses....ab-266
effect on tumors....246
Gonorrhea control, Denmark....247
Health department, Calhoun County drops..239
new county unit, Mich....240
public, new department at Pennsylvania..242
state commissioner: Dr. Moyer....241
Heart disease, circulatory effect of injecting dextrose or sucrose....ab-259
disease (rheumatic), dermatomyositis in.ab-262
enlarged, in children....ab-259
Hemangiomas, vertebral....ab-274
Hemophilia, platelet studies in....ab-263
Hexylresorcinol treatment of ascariasis....252
Hoerr, Norman L., to head anatomy dept..239
Hospital administrators institute....241
for speech disorders....241
Hush deodorant, dermatitis from?....253
Ice water, effect on alimentary tract....252
Industrial health activities, Ida....239
Infants, convulsions in....*195
feeding, vitamin and mineral content of canned fruits and vegetables....215
premature, reducing mortality....ab-263
Infections, acute, cause of convulsions....*194
resistance to, factor in....E-236
Insulin, sensitivity to, induced by protamine zinc insulin....*198
Insurance, life, physicians meet....245
Kidney calculi from hepatic dysfunction.ab-263
effect of sulfapyridine....C-250
King, B. T., Casselberry prize to....243
Knee cap, habitual dislocation....ab-270
Laboratory worker, fatal equine encephalomyelitis in....*206
Larynx aspect of primary blood diseases..ab-265
Leg, shortened after poliomyelitis, treatment.251
Legislation, medical....OS-238
Leukocytosis, laryngologic aspect....ab-265
Library, Gerrish Memorial....240
Liver dysfunction causes renal calculi....ab-263
hepaticoduodenostomy in bile duct strictures and injuries....*209
Lungs abscess, clinical study....ab-268
cancer and tar on roads....245
cancer, differentiating from abscess....ab-272
Lymphadenosis, acute, blood in....ab-265
Malpractice: license; absence of as evidence of incompetence....Ml-258
Manning, Isaac, retires....242
Marriages....247
Matas, Rudolph, honored....240
Measles, epidemic infection, virus pneumonia secondary to....ab-259
Medical Education, graduate, in North Dakota and District of Columbia...OS-237
Medical Examinations and Licensure....254
Medicolegal Abstracts....257
Meetings, Coming Meetings....258
Meninges lesions from poison oak?....252
Menopause symptoms, estrogens for....ab-266
Menstruation, blood platelets during....ab-263
Mental Disease, survey of care....239
Mental Health, commission....239
Mercurin suppositories, rectal irritation.213; *214
Microbiology, International Congress....243
Migraine, pituitary swelling cause of....ab-266
Minerals in canned fruits and vegetables....215
Moyer, Henry A., state health commissioner.241
Mum deodorant, dermatitis from?....253
Mycosis fungoides, bone marrow in....ab-270
Nephritis, sulfapyridine contraindicated..C-250
New York University, gifts for....241
News....239
Obstetrics, American Congress on....243
Organization Section....237
Otitis Media, blood sedimentation in....ab-262
Ovary-thyroid relationship and vitamin E..ab-273
Pancreatitis, acute, diagnosis; treatment..ab-272
Pediatrics, Rosenthal fellowship....239
Peptic Ulcer, late perforated marginal, 29 years after gastro-enterostomy....*207
Philippine Islands Medical Association....243
Physical Examination required for teachers.241
Physicians, insurance, meet....245
five, honored for research....239
order of, France....245
tuberculosis control and....*189
Pituitary, incretory function....ab-272
Simmonds' disease....244
swelling cause of migraine....ab-266
Pneumococcus antiserum, resorption....ab-274
Pneumonia, virus, secondary to epidemic..ab-259
Poliomyelitis epidemic decreases, S. C....242
sulfapyridine and urinary calculi....C-250
treatment of shortened leg after....251
Potatoes, sweet, nutritive value....ab-269
Pregnancy diagnosis, care of rabbits....252
diagnosis, Hogben toad test, etc....ab-267
Prize, Alvarenga, to Dr. Goldblatt....242
Casselberry, awarded....243
Janeway Medal to Dr. Failla....243
Mickle Award to Dr. Best....243
Progestin, clinical uses....ab-266
Prostatitis, sulfapyridine contraindicated..C-250
Psychoanalysis, Norway regulates....246
Psychosis in exophthalmic goiter....ab-273
Queckenstedt Test (reverse) for spinal block....253
Queries and Minor Notes....251
Rabbits, care of, for Friedman test....252
Elsasser-Wallace cancer test....252
Rabies, treatment, encephalitis from....ab-260
Research, medical, subsidies for....C-250
practitioners honored for....239
Respiration, paralysis with cerebellar tumor.*207
Rheumatism, cost of....246
Rhus dermatitis, cord or meningeal lesions after....252
dermatitis, treatment; prevention....251
Roentgen Ray burns, transfusion for....246
Russell, Lee, watch for criminal....243
Salyrgan suppositories, rectal irritation.213; *214
Scarlet Fever, prontosil rubrum for....ab-273
Sinuses, Nasal, infection foci in arthritis.ab-262
Skin cancer, electrothermy and radiation in.ab-265
Smallpox, first outbreak in 6 years, Conn....239
reaches new high....243
vaccination, dermatomyositis after....ab-262
Society Proceedings....258
Spasmophilia in childhood....*194
Speech disorders, National Hospital for....241
Spinal Cord symptoms from poison oak....252
Spine, heredity of hunchback....253
vertebral hemangiomas....ab-274
State Board Examinations....254
Streptococcus, sulfanilamide action on...ab-261
Sugar injection, circulatory effect....ab-259
Sulfanilamide, action of....245
action on hemolytic streptococcus....ab-261
treatment of scarlet fever with prontosil rubrum....ab-273
Sulfapyridine and urinary concretions....C-250
treatment of urinary infections....ab-268
Surgeons, training, Denmark....247
of Southern Railway System....239
Syphilis, congenital, clavicle sign....ab-267
third generation....ab-271
Syracuse University, alumni meeting....241
Taylor, H. M., Casselberry prize to....243
Teachers, physical examination required....241
tuberculosis in 26....239
Temperature of drinking water....252
Thyroid-ovary relationship and vitamin E.ab-273
Tonics and Sedatives....Adv. page 22
Tonsils, early chancre on....ab-271
Tubercle Bacillus, viability in building....251
Tuberculin testing of children, statistics....253
Tuberculosis, case finding....*192
control and the physician....*189
danger of transmission from former owner to new tenant?....251
more beds for patients....241
pulmonary, lipases in blood serum....ab-271
teachers having, Illinois....239
treatment, types and facilities for....*190
Tumors, gonadotropic effect....246
Turner, Thomas B., appointment....240
Typhoid from domestic servants....239
Ultraviolet Rays effect on viability of tubercle bacilli....251
Undulant Fever, chronic, Charlotte, N. C..*201
University of Pennsylvania, public health department....242
Urinary Tract calculi from sulfapyridine.ab-250
infections, sulfapyridine in....ab-268
Vaginitis, estrogen therapy....ab-266
Vegetables, canned, vitamin-mineral content.215
Verruga, non-Peruvian....E-235
Vitamin C and aging eye....ab-261
E, effect on ovary-thyroid relationship..ab-273
in canned fruits and vegetables....215
Wallace-Elsasser rabbit test for cancer....252
Water, drinking, temperature of....252
Wheat germ oil used with estrogens....ab-273
Whooping Cough, epidemic infection, virus pneumonia secondary to....ab-259
Woman's Auxiliary....238
Workmen's Compensation Acts: lead poisoning from tetra-ethyl gasoline....Ml-257

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THE PHYSICIAN AND TUBERCULOSIS

J. ARTHUR MYERS, M.D.

MINNEAPOLIS

Osler's message to the general practitioner on the subject of tuberculosis was:

> The leadership of the battle against this scourge is in your hands. Much has been done, much remains to do. By early diagnosis and prompt, systematic treatment of individual cases, by striving in every possible way to improve the social condition of the poor, by joining actively in the work of the local and national antituberculosis societies you can help in the most important and the most hopeful campaign ever undertaken by the profession.

This statement was a challenge to the medical profession at that time but it is a greater challenge now. Since it was made the tuberculosis situation, largely through the endeavors of the medical profession and the National Tuberculosis Association, has changed in magnitude but not in emphasis. The present armamentarium includes sufficient understanding and equipment for control of tuberculosis to the same degree as other contagious diseases have been controlled. The heritage of the present day has come through a long line of physicians and pure scientists who labored in darkness through the centuries, but each torch that was lighted was carried on by others until today the field is well illuminated.

What is really known about tuberculosis?

THE CAUSE

The accumulation of facts and methods made it possible for Koch to discover and demonstrate that the tubercle bacillus is the cause of tuberculosis. Much has been said about secondary causes, such as constitution, body chemistry, dose of bacilli and run-down condition. Such factors as constitution and differences in body chemistry may be of considerable importance in the development of clinical tuberculosis, yet the fact remains that almost nothing is known about them. The development of tuberculosis has often been attributed to a "run-down" condition of the body when in all probability this condition was the result of the developing tuberculosis. The dose of tubercle bacilli may be an important factor, but controlled doses are possible only in the laboratory. Corper has shown that on a medium ideal for the growth of tubercle bacilli from one to ten will multiply to one billion in three or four weeks. Whether human tissue ever constitutes such an ideal medium is not known, but it is known that bacilli proliferate in the body sufficiently to cause death. Suffice it to say that, regardless of such factors as constitution and body chemistry, tuberculosis never develops in the absence of the tubercle bacillus.

CONTAGIOUSNESS

Several centuries before Christ the contagiousness of tuberculosis was definitely stated. By 1865 Villemin had proved definitely that the disease is contagious. Koch's discovery confirmed Villemin's work and revealed the cause of the contagion. Today it is recognized that human beings cannot live long in contact with open tuberculosis without reacting to the tuberculin test, because of the development of primary complexes. Because of this, epidemiologic methods have been employed on a wide scale with tuberculosis. It is important that physicians report all cases to the local and state health departments in order that sources of infection may be traced and arrangements made for adequate examination of contacts. Likewise, because of its contagiousness, the treatment of the disease by a strict technic for contagion is imperative.

THE DIAGNOSIS

A definite history of known exposure is important, but the absence of such a history is of no value. Symptoms are usually entirely absent or mild until the disease is well advanced. This is also true of physical signs. Laboratory examinations of sputum for tubercle bacilli usually do not reveal them until the lesions are well advanced. Therefore he who depends on symptoms, signs and presence of bacilli in the sputum will detect but little tuberculosis while it is in the minimal stage; in fact, in from 80 to 85 per cent of cases the disease is well advanced before significant symptoms appear. These facts can have only one meaning to the medical profession, namely that tuberculosis must be sought and found among healthy appearing persons if patients are to be treated most successfully and the disease kept from becoming communicable.

Physicians are now equipped to detect tuberculosis within three to seven weeks after bacilli have entered the body and the primary complexes have begun to develop. This is done by the tuberculin test. A tuberculin reaction indicates with a high degree of certainty that a primary tuberculosis complex containing live tubercle bacilli is present in the body. This complex is the first phase in the development of tuberculosis and is tuberculosis. The former conception that tuberculosis is present only when the individual manifests evidences of illness was erroneous. When such evidence is present the patient is entering or already is in the consumptive stage. As no one develops clinical tuberculosis without first having had the primary complex, the first step in the diagnosis is to determine by the tuberculin test whether this complex is present. Since the persons who do not react to the tuberculin

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Presented as part of the address of the president of the National Tuberculosis Association at Los Angeles June 20, 1938.

From the Departments of Preventive Medicine and Internal Medicine, University of Minnesota, and the Lymanhurst Health Center, Minneapolis.

test may subsequently be exposed to a carrier or a person with frank tuberculosis, the test should be repeated every year to determine whether a primary complex has developed since the test was last administered. No phase of the examination can possibly substitute for the tuberculin test. It diagnoses accurately the primary tuberculosis complex. Beyond this point it provides no assistance in diagnosis. Any examination that omits the tuberculin test, whether in a physician's office or in survey work, is incomplete.

Having identified a tuberculin reactor, who is by that token a potential subject for the reinfection form of clinical tuberculosis, the physician must seek carefully to determine whether this type is already present in demonstrable form. Chronic reinfection pulmonary tuberculosis develops in children prior to adolescence with such rarity that there is almost no need to carry out the further phases of the examination until this period is reached. When young adult life begins, the physician must seek carefully to determine whether clinical pulmonary tuberculosis is developing in the lungs of tuberculin reactors. Chronic pulmonary lesions usually start in a small way, and for some time no phase of the examination will reveal their location. However, as the disease extends and more reaction occurs in the tissues around it the area becomes sufficiently large and dense to obstruct the x-rays and therefore a shadow is produced on the film and often on the fluoroscopic screen. Such shadows may be found by x-ray examination on an average two or three years before the disease causes symptoms which will bring the patient to the physician for examination. A final diagnosis of tuberculosis cannot be made from shadows cast on single or even on stereoscopic x-ray films, since other diseases cast shadows which in every respect appear the same as those of tuberculosis. Just as the tuberculin test screens out those who have primary complexes in their bodies, so the x-ray film screens from among the tuberculin reactors those who have visible areas of disease in the lungs. The number of tuberculin reactors whose x-ray films reveal shadows which may be due to clinical pulmonary tuberculosis is relatively small in any one year. For example, 4,372 students entered the University of Minnesota in the fall of 1936. The tuberculin test was administered to 4,365, of whom 1,004 reacted. Of these 982 had x-ray films of the chest, among whom only thirteen presented shadows that might have been cast by tuberculous lesions and therefore required complete examination for diagnosis.

When the x-ray film reveals no evidence of disease, examination of tuberculin reactors should be repeated annually, since during any subsequent year tuberculous lesions of a clinical nature may develop. The presence of such shadows at the original x-ray examination or any subsequent examination necessitates a most careful and complete examination to determine whether the shadows are due to tuberculosis and if so whether the disease is progressive and requires treatment or is communicable and requires technic suitable to contagious disease in its management. This phase of the examination may require various laboratory procedures, such as the examination of the sputum and the gastric contents for tubercle bacilli. Even bronchoscopic examinations may be necessary to differentiate between the various diseases. In some cases it is necessary to make a series of x-ray films over a period of weeks or months to determine whether the lesion that casts the shadow persists, decreases or increases in size. Those which disappear within a month usually are not due to tuberculosis; those which persist two or three months or longer may be due to tuberculosis. Other conditions, such as malignant growth and fungous disease, also cause persistent shadows in the same locations, and these conditions may coexist with tuberculosis. Therefore there is nothing sufficiently characteristic about a single x-ray examination to justify final diagnosis. Nevertheless, the x-ray study is far superior to any other phase of the examination in detecting the location of small areas of disease. If such study is omitted, diagnoses of chronic pulmonary tuberculosis are often postponed until the symptoms of advanced disease advertise its presence.

Drolet has found that the ratio of deaths to new cases of tuberculosis reported in some communities has varied little during the past twenty years. This is not surprising when it is considered that the majority of tuberculous patients still have the disease in the moderate to the far advanced stage when symptoms bring them to the physician for examination. This is due to the nature of the disease rather than to failure of treatment, and with present methods it will continue until the case finding program extends to all healthy persons and the disease is detected long before symptoms appear.

The presence of the primary complex can now be detected within three to seven weeks after it starts to develop, and chronic pulmonary tuberculosis can be located two or three years before significant symptoms appear. Therefore healthy appearing persons must be examined if tuberculosis is to be diagnosed at a time when it can be most successfully treated and before it is communicable.

THE TREATMENT

Every patient whose disease cannot be rendered noncommunicable in a short time should be admitted to a sanatorium or a general hospital, either private or public. In 1935 the American Medical Association reported the fact that sanatoriums, tuberculosis departments and preventoriums in the United States represent a total replacement valuation of approximately $328,937,777.36 and that the annual cost of maintenance of these services amounts to approximately $75,906,582.41. The fact was also shown that 418 general hospitals in 1935 had tuberculosis departments with a capacity of 14,601 patients and special tuberculosis services were in operation in 322 other institutions, such as those for nervous and mental diseases, with a total capacity of 13,933 beds. In 1934 the sanatoriums and general hospitals admitted 121,706 patients. The directory of sanatoriums of the National Tuberculosis Association shows that in 1938 there were 523 sanatoriums, with a capacity of 74,752 beds.

In at least one state more beds for the tuberculous in sanatoriums and general hospitals are available than are now being used. Yet in some states the number of beds is far below the need. Although tuberculosis in all its phases is definitely decreasing with even the present haphazard methods, postponement of provision for patients with communicable disease simply prolongs the present dilemma. The other communicable diseases which show their disastrous results immediately command quarantine or hospitalization at the time of an epidemic. The same factors hold true for tuberculosis even though the disastrous results are delayed and less spectacular. If the additional beds were needed for

only five or ten years, the money would be well spent. Certainly the pesthouses, long since abandoned because of disappearance of demand for their beds, served a useful purpose in controlling other contagious diseases. The fundamental fact remains that no community can solve its tuberculosis problem until it provides a sufficient number of beds for the immediate isolation of every person with known communicable tuberculosis and every one with unsuspected tuberculosis which may be brought to light by adequate examination of the entire population.

The patient with the reinfection form of clinical pulmonary tuberculosis should be kept comfortable, and the air of his environment should be conditioned to a temperature of approximately 68 F. and a relative humidity of from 40 to 60 per cent in slow circulation, with all contamination removed. Food fads must be discarded and the patient's diet arranged on the basis of bodily requirements. All attempts have failed to find a drug which will disinfect the body of tubercle bacilli. The x-rays have failed to destroy tubercle bacilli in the lungs, and their use in the treatment of pulmonary tuberculosis has been abandoned. Tuberculin as a therapeutic agent has failed to cause the desired results, so that today it is rarely employed. However, desensitization of tissues through the administration of tuberculin in an attempt to prevent necrosis if and when reinfection occurs is being actively investigated. All in all physicians are forced to resort to rest of the diseased organ.

While strict bed rest alone is valuable for the ill person in providing an opportunity to build up a reserve of energy, it does little to rest the diseased lung. Therefore mechanical procedures which provide for localized rest of the area of disease are now in general use. For example, artificial pneumothorax is employed by general practitioners as well as by specialists in pulmonary disease. The indications for this method of treatment include minimal progressive lesions in the bodies of healthy appearing persons as well as advanced lesions. The collapse of the diseased area reduces the oxygen supply of the tubercle bacilli and thus materially interferes with their multiplication. By reduction of the movement in and around the diseased lung on respiration, connective tissue cells are permitted to proliferate more readily, and this process probably is actually stimulated by the collapse, so that walling and scarring off of the diseased area results. The inner walls of collapsed cavities may become adherent, so as to result in complete obliteration of the cavity. By this method long periods of bed rest are often avoided, and in many cases little or no loss of time from work is necessary. For certain selected persons who cannot have artificial pneumothorax because of adhesions, extrapleural pneumothorax is being practiced with apparent success.

When artificial pneumothorax cannot be induced to such a degree as to obtain a satisfactory result, surgical collapse of the lung by such procedures as extrapleural thoracoplasty may accomplish the same end. Only a few years ago one could count on the fingers of a single hand the surgeons in America well qualified to perform major operations on the chest; today they are to be found in all of the larger and many of the smaller cities. Therefore there is no excuse for not giving the advantages of collapse therapy to any patient whose disease indicates it. The financial status of the patient is no reason for postponing the special forms of treatment, since physicians and surgeons today, as has always been true, give freely of their time and skill. It must constantly be kept in mind that collapse therapy does not cure tuberculosis nor does it always prevent subsequent development of lesions in other parts of the body, such as the contralateral lung and the kidney. Collapse only brings about a more favorable condition in and around the area of disease, so that the defense mechanism of the body can control it. Collapse procedures are valuable not only to many patients but to the families and communities, since they often convert the disease from a contagious to a noncontagious stage.

IMMUNIZATION

Enthusiasm for the production of artificial immunity has waxed and waned since 1888, but to date nothing of proved value has been discovered. Any immunity which may develop from the primary complex, even though it harbors living tubercle bacilli for decades, is not dependable from the standpoint of subsequent attacks of clinical disease. Since this is true, attempts to produce immunity artificially through the use of living or dead, virulent or attenuated tubercle bacilli begin with a shaky premise. Therefore at the present moment immunity offers little or no help.

WELL ESTABLISHED FACTS

With modern facilities for diagnosis, treatment and prevention of tuberculosis some definite facts have been established which have produced a greater understanding of the disease. Through animal experimentation and close observation of the same human beings over a long period, the evolution of tuberculosis from the time bacilli enter the body until the disease terminates in death is well known. There is no dividing line between tuberculous infection and tuberculous disease, for every person who reacts typically to tuberculin has the primary complex somewhere in the body. This is the first phase in the development of tuberculosis and is not separated from other phases which are dependent on it.

Two types of tuberculosis are now recognized: The first infection type begins when tubercle bacilli enter tissues not sensitized to tuberculoprotein. It causes but little destruction of tissues, and if symptoms are present at all they are of short duration. Usually the person who has it does not know of its presence unless a tuberculin test is made. The primary complex is the first infection type of tuberculosis. While this type of disease probably at one time developed in the bodies of nearly all children, the situation has been so changed that in many places today not more than 10 or 15 per cent of children have been infected. In the state of Minnesota actual observation has shown that in only approximately 1 per cent of children and young adults do primary complexes develop each year; however, in other parts of the country the rate of infection is much higher. The primary tuberculosis complex is resisted so well by the child's defense mechanism that it requires no treatment whatever. It is true that some infants and children die of tuberculous pneumonia, meningitis and generalized miliary tuberculosis, but these are reinfection forms of the disease. Chronic pulmonary tuberculosis is a rare condition in the child before adolescence; in fact, from the ages of 5 to 15 years illness and death from tuberculosis are almost nil. Excellent evidence to support this statement is to be found in the fact that in 1936 there were in the

United States 24,403,489 children from 5 to 15 years of age. If the rate of infection is only approximately 1 per cent a year throughout the nation and if it is considered that only 10 per cent of these children have the primary tuberculosis complex, 2,440,349 would have reacted to tuberculin. In 1936 there were only 1,807 deaths from all forms of reinfection tuberculosis among children from 5 to 15 years of age; in other words, 99.926 per cent of the infected children tolerated well the primary tuberculosis complex. Only 0.074 per cent had the fatal reinfection type of tuberculosis in this period.

It is now known that treatment has no influence on the primary complex, as the walls form around the bacilli in the same way when the person goes about the usual activities of life as when he is placed on strict bed rest or collapse therapy. Nothing destroys the tubercle bacilli or reduces the allergy of the tissues. Apparently nothing has any influence on the later escape of bacilli from the primary foci. The infant or child with primary tuberculosis on treatment, including strict bed rest, may have meningitis, miliary tuberculosis or tuberculous pneumonia as readily as the one leading an active life. Moreover, the person who has had drastic treatment for the primary complex apparently is just as likely to fall ill later from acute or chronic forms of the disease as the person who has had no treatment for the primary disease. Therefore it is difficult to find any justification whatever for the construction of preventoriums or children's buildings on sanatorium grounds or the further maintenance of those already in operation.

Moreover, since tuberculosis in communicable form is so rare between the ages of 5 and 15 years, there is practically no justification for the making of x-ray films of the chests of children at this age. The huge sums of money that have been expended on surveys among school children to determine this fact were justified but, with the fact determined, to continue such work is a waste of funds.

Since in many parts of the country the majority of children pass into adult life without having had the primary tuberculosis complex, and even if only 1 per cent of the population becomes infected each year, the time has been reached when more first infections occur in adults than in children.

It was formerly believed that the person who was not infected in childhood is in a hazardous position if infection occurs in adult life. Actual observations show that such persons tolerate the development of primary complexes with practically no immediate symptoms or incapacity, just as is true of children. In fact, of several hundred students of nursing and medicine who became infected under my observation only three showed any symptoms that might be due to the primary complex. Indeed, I have not seen the so-called infantile type of tuberculosis develop in a single person who first became infected in adult life; therefore, from my evidence as well as that obtained from the work of others, I am convinced that the first infection type of tuberculosis should be postponed as long as possible.

Apparently there is now general agreement among tuberculosis workers that the ideal situation for the individual or the community is the absence of tuberculous infection, since the reinfection type of tuberculosis is dependent for its development on the presence of the primary complex, which has sensitized the tissues to tuberculoprotein and often provides the tubercle bacilli for the reinfection. The reactions of the tissues to reinfections with tubercle bacilli, whether from exogenous or endogenous sources, are much more intense than those to first infections, because of the sensitiveness of the tissues to tuberculoprotein. In the areas of disease necrosis is common; this results in cavity formation. Indeed, the reinfection type of tuberculosis causes nearly all of the illness and death from this disease. Through longitudinal studies—that is, observation of the same persons over a long period—it has been found that the child who reacts to tuberculin is more likely to have the reinfection type in adult life, whether or not the location of the primary complex is determined by x-ray film during childhood. In fact, among more than 400 children who reacted to tuberculin and who were observed for ten or more years at the Lymanhurst Health Center, approximately 15 per cent have already fallen ill or died from tuberculosis of the reinfection type. If this situation exists throughout the country one can readily appreciate the seriousness of the primary tuberculosis complex in the human body.

From adolescence on the reinfection chronic form of pulmonary tuberculosis develops in addition to the primary complex. The number of cases increases through the twenties and thirties and indeed the mortality peak is reached during the thirties. Many persons pass into the declining period of life with chronic lesions that may or may not have caused illness. In other persons who have had no evidence of clinical tuberculosis it develops during the declining decades of life. The result is that, after the age of 50, for the number of persons living the incidence of communicable pulmonary tuberculosis is higher than in any other period. Indeed, tuberculosis among the aged is a serious problem, because of both its prevalence and benignity and its communicability.

In recent years attempts have been made to employ case finding on a larger scale than ever before. Tuberculin testing of large groups has been practiced in various places, and many physicians use the test as a routine in their office practice. Indeed, every year millions of tuberculin tests are administered to human beings. To make x-ray films of the chests of such large numbers of persons was an impossibility with the usual equipment. Born of necessity, a new device eliminates the handling of each individual film in exposure, development and interpretation. To save time and cost, rolls of film for the x-ray camera similar to those of the ordinary kodak are now available. A single rapid camera can make a thousand chest exposures a day. The rapid development and viewing of these rolls of films save further time and expense. In fact the film is delivered to the physician ready for interpretation, at a cost of approximately 65 cents, and if the volume of this work is sufficiently increased the cost may be reduced. Moreover, the films are of excellent quality. This method has been approved by large medical societies, and there now appears little doubt that it will extend to the whole nation and completely revolutionize case finding of tuberculosis.

Various methods of finding cases of tuberculosis have been employed. The first was the examination of only the contacts of persons known to have tuberculosis. This was too limited, since many unknown sources exist which may not come to light for years or may even be first detected at autopsy. Another method consists of administering the tuberculin test to all school children and examining the adult associates of the positive

reactors. This is good, but there are persons with tuberculosis in homes with no children of school age. A third method, consisting only of making x-ray films of the chest and arriving at diagnoses in this manner, is to be condemned because from the shadow cast by an area of disease one cannot accurately determine the cause. It is poor economy to make films annually of the chests of 130,000,000 persons when only 65,000,000 or less are at the moment infected with tubercle bacilli. The only possible solution is a careful search for tuberculosis in the bodies of all persons in the community, with every phase of the examination of proved value being used.

Tuberculin tests and x-ray examinations of the entire population of this nation can be done for one half of what is now being spent annually for the hospitalization of patients whose disease was detected by old methods after it had become so advanced that long periods of institutional care were necessary and the patient's best chances of complete recovery lost. Wherever examinations have been made of large groups of healthy appearing adults, the number of cases found has been gratifying.

RESULTS

The accomplishments in the field of tuberculosis over the past two decades have been almost miraculous; in fact more has actually been done to control the disease than in all the centuries of the past, as indicated by the decline in mortality, morbidity and rate of infection. Boynton has shown that in one state where even feeble attempts have been made to protect infants against exposure the mortality from tuberculosis among those under 1 year of age decreased 88 per cent during the eighteen years that preceded 1933. In 1904 in this country approximately 202 persons lost their lives each year for every hundred thousand of the population. In 1937 only fifty-five persons and in some places less than thirty per hundred thousand died from tuberculosis. In some cities and states the demand for sanatorium beds has definitely decreased in recent years. In one city where 47 per cent of the children in grade school reacted to tuberculin in 1926 only 18 per cent reacted in 1936. Similar decreases in the incidence of tuberculin reactors are being reported in other places; in fact tuberculosis has decreased in some parts of this country to such an extent that a regional meeting of the National Tuberculosis Association was held in 1938 to consider methods of accrediting counties and states, such as the veterinarians found valuable.

The veterinarian has aided greatly in the control of tuberculosis both in animals and in man. In all but twenty counties of the nation the incidence of tuberculous infection among cattle has been reduced to 0.5 per cent or less, and in some whole counties the disease has been completely eradicated. This has had a marked influence on certain forms of tuberculosis in man. In one state it has been estimated that fifteen years ago approximately 70 per cent of the patients in hospitals for crippled children had tuberculosis of the bones and joints. A recent survey of all cripples under 21 in that state showed that approximately 3 per cent of their disabilities were due to tuberculosis. It is probable that the control of tuberculosis among cattle has contributed to the decline in the incidence of positive tuberculin reactors among children and young adults.

THE FUTURE

Although the challenge of Osler has been accepted by the medical profession, approximately 70,000 persons lose their lives every year from this disease and many more are incapacitated at all times. Therefore let us proceed with a united front and actually control tuberculosis.

There is no excuse for any physician not being informed on the modern procedures in the control of tuberculosis. The National Tuberculosis Association publishes a pamphlet containing a list of more than a hundred approved books on various phases of the subject. Volumes of state and regional societies as well as a number of special medical journals contain numerour articles on this subject. THE JOURNAL constantly keeps tuberculosis before its readers, as indicated by the fact that in 1937 alone it contained seventeen original articles, 169 abstracts and 129 miscellaneous notes, letters and editorials on tuberculosis.

The course leading to the control of tuberculosis is clear. The word control is used deliberately, because such factors as indifference and procrastination will probably make complete eradication impossible, just as has been true of smallpox. If tuberculosis workers proceed with what is known, enlarging and intensifying the program everywhere, tuberculosis should be reduced to a prevalence no greater than diphtheria and typhoid have at present. The procedure is simple and must not be complicated by allowing extraneous and unimportant factors to enter. The more simple it can be kept, the quicker will tuberculosis be controlled. The following procedures directed by the medical profession and carried out by its members in cooperation with closely allied groups and an informed public should suffice:

1. Administer the tuberculin test to every one. Both old tuberculin and purified protein derivative are satisfactory testing materials. Tuberculin is now being furnished free to physicians by many tuberculosis associations and health departments with directions for administration. The test can be administered to several hundred persons in an hour by one physician. Probably not more than 50 per cent of the population of 130,000,000 are sensitized to tuberculin; therefore only 65,000,000 or less would need to be retested annually, and this number should definitely decrease in a few years. Therefore the total cost would not be large.

2. Make x-ray films of the chests of all reactors approaching and beyond adolescence. Approximately 35,000,000 of the population is under the age of 15 years. Both celluloid and paper films are satisfactory in every respect. Paper films in rolls can be prepared for the physician's description of shadows at 65 cents apiece or less. All adult reactors whose films are clear, as well as those who subsequently become reactors, should have films made of the chest annually. No one should attempt final diagnoses from shadows on x-ray film alone; the film simply serves to screen out those who have lesions which may be tuberculous.

3. Make complete examinations of all whose x-ray films present shadows which might be due to tuberculosis in order to arrive at the true diagnosis. These must be performed with the greatest of care, as serious injustice is done by making diagnoses on insufficient evidence.

4. Arrange for an adequate number of beds in private and public hospitals and sanatoriums so that all persons who have tubercle bacilli in the sputum which cannot

be eliminated quickly can at once be removed from their homes. The strict technic for contagious disease should be established whenever patients with communicable disease are treated. It is as important to protect hospital personnel as members of the patient's family from contagious disease.

5. Arrange to treat or keep under close observation all who have tuberculous lesions the progressiveness or activity of which cannot be determined at once, as well as those who have progressive minimal disease in the presymptomatic and precontagious stage. The physician can manage the disease of the majority of such persons in the home.

6. Cooperate in arranging for rehabilitation or reeducation of all tuberculous patients who control their disease and whose previous or anticipated work might be hazardous to their health. Keep all such persons under close observation through frequent periodic examinations after they have resumed the usual activities of life, since tuberculosis is usually arrested, not cured, and is a relapsing disease.

7. Arrange for the protection of citizens against the importation of persons with communicable tuberculosis by providing adequate examinations of all persons entering the country's ports and crossing its borders. Exercise the same precautions for those of other nations by examining adequately this country's citizens before they leave its ports or cross its borders.

8. Support the veterinarians at every opportunity in their efforts to control the disease in animals, because it is transmissible to man. Their past accomplishments merit this and more.

9. Take an active part in local and national tuberculosis associations, the local medical society, the American Medical Association and all other organizations engaged in tuberculosis work. In this manner provision may be made whereby the use of public funds will supplement rather than supplant the practice of medicine.

A heavy responsibility rests on the medical profession. If practitioners now fail to apply their knowledge so as to control tuberculosis quickly, they will bring discredit to the profession. At this moment there exists an opportunity to win another great victory over disease similar to the victories over smallpox, diphtheria and typhoid; this means sacrifice—the kind that physicians made in winning other victories. Let us continue the traditions of the profession in this respect by giving liberally of our time and effort in order to remove the demand for our service as far as the treatment of this contagious disease is concerned. Nothing that the medical profession could do at this time would bring more well merited respect, alleviate more suffering and prevent more untimely deaths than a concerted and successful effort to control tuberculosis.

Experimental Medicine.—The final and practical use of almost all medical science is to maintain health and to combat disease in mankind. It is in the very nature of things that the study of disease, to be effective, must begin as it must end, with disease itself, and that all knowledge applicable to human disease must owe its inspiration, directly or indirectly, to intimate contact with disease as this exists in living man. If the vitality of medicine is to be increased, it must be clearly recognized that there is a fertile science that deals primarily with patients, and this must be encouraged to a more vigorous growth. The science might be called "experimental medicine" if this term had not come to convey too strongly the idea of experiment on animals.—Lewis, Sir Thomas: Research in Medicine and Other Addresses, London, H. K. Lewis & Co., Ltd., 1939.

CONVULSIONS IN CHILDHOOD

A REVIEW OF ONE THOUSAND CASES

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In 1932 the first complete classification of convulsions in childhood was presented together with a study of 419 cases.[1] These cases were studied as thoroughly as facilities permitted. A detailed history was obtained of the family and of the patient. Blood counts, urinalyses, spinal fluid examinations and Wassermann tests were made on all patients. Blood chemistry studies, particularly determinations of sugar, calcium and phosphorus, and roentgenograms, including encephalograms, were made when they seemed indicated. Treatment was instituted and the patients were followed as long as possible. A revision of the original classification was presented in 1934 with the addition of eighty-one cases and a correction according to the age at the time of the first convulsion.[2] An additional series of 500 cases has been similarly studied and a revised classification is here presented based on 1,000 cases.

The frequency of convulsions in young children has long been a subject of great interest. Various theories and animal experimentation have been submitted in attempts at explanation. A survey of the accompanying tables, however, reveals a logical basis for most convulsions and obviates the necessity for theorization (table 1). The young child is subject to certain hazards and diseases. These diseases are characterized by a tendency to produce convulsions. Once these hazards have been safely passed, the child is no more susceptible to seizures than is the adult under similar circumstances. The greatest hazard for the newly born infant is his passage through the birth canal. With a normal delivery, from 10 to 12 per cent of all infants suffer some degree of intracranial injury. With a difficult or abnormal delivery this percentage increases to almost 100;[3] 15.5 per cent of the convulsions of childhood are due to birth injury or their sequelae.

TABLE 1.—*Convulsions in 1,000 Cases, Total Series*

	Per Cent
Acute infection	34.0
Idiopathic epilepsy	23.6
Cerebral birth injury or residue	15.5
Miscellaneous causes	12.7
Spasmophilia or tetany	8.9
Cause not established	5.3

The next chronologic hazard is that associated with the acute infections (table 2). The respiratory infections and the infectious diseases, not including meningitis, encephalitis and gastro-enteritis, are responsible for 34 per cent of the convulsions in this series. These diseases are much more frequent and usually more severe in children than in adults. Their severity and the undeveloped immunologic response in the child determine the possibility of convulsions in most instances. The pathologic basis for these convulsions has not been established.

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1. Peterman, M. G.: Convulsions in Childhood, J. A. M. A. **99**: 546 (Aug. 13) 1932.
2. Peterman, M. G.: Convulsions in Childhood, J. A. M. A. **102**: 1729 (May 26) 1934.
3. Ehrenfest, Hugo: Can Birth Injuries Be Prevented? J. A. M. A. **92**: 97 (Jan. 12) 1929.

After six months the rachitic infant is subject to spasmophilia, and this disease produced convulsions in 8.9 per cent of my cases (table 3). When this age period (from 6 to 36 months) is passed, this cause of convulsions is removed. Idiopathic epilepsy next assumes predominance as the causative factor in 23.6 per cent of the cases. Epilepsy has its onset in childhood because it is probably a hereditary constitutional disease.[4] (The large number of cases of epilepsy in this series of cases may be misinterpreted as the result of my particular interest in this disease. However, the referred cases of convulsions are equally divided and I feel that the statistics are not weighted with epilepsy.)

TABLE 2.—*Convulsions in Newborn to One Month (7.9 per Cent of Total)*

	Cases
Cerebral birth injury (hemorrhage, edema or anoxemia)	54
Acute infection	8
Idiopathic epilepsy (proved later)	3
Infantile tetany	3
Hydrocephalus	2
Cerebral agenesis	1
Congenital heart disease	1
Congenital syphilis	1
Meningitis (secondary)	1
Cause not established	5

Thus cerebral birth injury, acute infection, spasmophilia and epilepsy are responsible for 82 per cent of the convulsions in childhood (table 4). Sixty-six per cent of the convulsions of childhood occur within the first three years of life. Cerebral birth injury, acute infection and spasmophilia account for 58 per cent. They furnish an adequate pathologic basis or explanation for the seizures and do not require the assumption of an instability within the organism or any other theory. In this age period there is a small group of cases, 3.9 per cent, in which the pathologic basis for the convulsions could not be established. Most of these convulsions were associated with high fever but not with any detected infection. The convulsions associated with fever occur at irregular intervals for two or three years in children under 3 years of age and then do not recur. These cases constitute a clinical entity not yet recognized. Evidence has been submitted that they are aborted cases of epilepsy.[2] It has been demonstrated that convulsions may be produced in a large percentage of kittens by the production of a rapid rise in temperature. Adult cats are not subject to convulsions under similar conditions.[5] However, animal experiments have shed little light on human convulsions.

Byers and Hass [6] have provided an explanation for many of the convulsions associated with "gastro-enteritis." These authors found a cerebral venous sinus thrombosis at necropsy in fifty infants who presented an indefinite clinical picture in which the outstanding symptoms were neurologic. The diagnosis was made only at necropsy. However, a certain number of patients with this syndrome must recover. In these the diagnosis cannot be established. The clinical picture is one of nutritional disturbance usually followed after days or weeks by meningeal irritation, fever and convulsions. Undoubtedly a certain number of the convulsions in this series included under the group of 5.3 per cent of cases listed as cause unknown were due to dural sinus thrombosis following gastro-enteritis. Ebbs [7] reported eight cases in 1937 and detailed a clinical syndrome similar to that described by Bailey and Hass,[8] who reported thirty cases.

It is rather singular that in my series of cases none were found to be due to hypoglycemia or hyperinsulinism (table 5). Josephs,[9] Harris [10] and others have described cases in which the convulsions were apparently due to a low blood sugar. However, no such cases have come under my observation. I have seen six patients in whom the convulsions had been attributed to this cause elsewhere. In these cases I have been unable to demonstrate a consistent hypoglycemia before, during or after a convulsion. Convulsions could not be produced by fasting or with insulin. Repeated dextrose tolerance curves have been normal. Other authors have reported similar experiences.[11] It is possible that hypoglycemia, like the alkalosis produced by the Rosett deep breathing phenomenon, will precipitate a convulsion in a child with an organic lesion or an epilepsy. For example, in spasmophilia the administration of calcium or an acute infection may precipitate a convulsion, but these factors must be considered only the immediate precipitating causes. Gibbs and Lennox have stated that, "in two patients who displayed a large amount of petit mal activity, intravenous injection of a solution of dextrose abolished this activity." In these cases insulin produced marked exacerbation of the pathologic activity but sucrose did not have the same effect. "The amount of petit mal activity in these cases tended to be inversely proportional to the level of the blood sugar." [12] These observations do not coincide with my experience that fasting and the ketogenic diet, which induce low blood sugars and a depletion of carbohydrate in the body, are the most effective procedures available to control petit mal epilepsy.[13]

I have seen no newly born diabetic infants in convulsions. I have seen no convulsions in which an allergic reaction could be considered a factor. There are few cases of epilepsy with an eosinophilia in my series. No convulsions due to carotid sinus stimulation have been found in this series of cases. Terminal convulsions are not included in this series. I have seen convulsions in two children during ether anesthesia. The mechanism is not known. Seevers and his

TABLE 3.—*Convulsions from 1 to 6 Months (13.8 per Cent of Total)*

	Cases
Acute infection	57
Cerebral birth injury	25
Spasmophilia or tetany	19
Cerebral agenesis	7
Idiopathic epilepsy	5
Hydrocephalus	3
Pertussis (cerebral hemorrhage)	2
Brain trauma	1
Cerebral thrombosis	1
Congenital heart disease	1
Cause not established	17

4. Peterman, M. G.: Convulsions in Childhood, Am. J. Psychiat. **92**: 1433 (May) 1936.
5. Wegman, M. E.: Factors Influencing the Relation of Convulsions and Hyperthermia, J. Pediat. **14**: 190 (Feb.) 1939.
6. Byers, R. K., and Hass, G. M.: Thrombosis of the Dural Venous Sinuses in Infancy and in Childhood, Am. J. Dis. Child. **45**: 1161 (June) 1933.
7. Ebbs, J. H.: Cerebral Sinus Thrombosis in Children, Arch. Dis. Childhood **12**: 133 (June) 1937.
8. Bailey, O. T., and Hass, G. M.: Dural Sinus Thrombosis, J. Pediat. **11**: 755, 1937.
9. Josephs, Hugh W.: Fasting as a Cause of Convulsions, Am. J. Dis. Child. **31**: 169 (Feb.) 1926.
10. Harris, Seale: Epilepsy and Narcolepsy Associated with Hyperinsulinism, J. A. M. A. **100**: 321 (Feb. 4) 1933.
11. Ziskind, Eugene: Insulin Hypoglycemia in Epilepsy, Arch. Neurol. & Psychiat. **36**: 331 (Aug.) 1936.
12. Gibbs, F. A.; Gibbs, E. L., and Lennox, W. G.: Cerebral Dysrhythmias of Epilepsy, Arch. Neurol. & Psychiat. **39**: 298 (Feb.) 1938.
13. Peterman, M. G.: Epilepsy in Childhood, Internat. Clin. **2**: 99 (June) 1935.

co-workers state that "Ether anesthesia is accompanied by a fixed acid acidosis. Other factors which produce an acidosis, such as pyrexia and CO_2 retention, have been present in most reported cases of convulsions occurring during anesthesia. The question arises whether acidosis is not the usual cause of 'ether convulsions'." In their experiments ether + pyrexia + carbon dioxide (from 13 to 17 per cent) produced convulsions or twitchings in 64 per cent of forty-two rats. They also state that further experiments indicate that similar results may be expected in dogs.[14]

TABLE 4.—*Convulsions from 6 to 36 Months (44.2 per Cent of Total)*

	Cases
Acute infection	194
Idiopathic epilepsy	66
Spasmophilia or tetany	57
Cerebral birth injury or residue	49
Meningitis (influenzal 6, meningococcic 3, streptococcic 2, pneumococcic 1, staphylococcic 1, tuberculous 1)	14
Encephalitis, all types, acute and chronic	13
Pertussis, intracranial hemorrhage?	7
Cerebral agenesis	6
Acute anterior poliomyelitis	3
Polioencephalitis (Strümpell?)	2
Brain injury, traumatic	4
Hydrocephalus	4
Gastro-enteritis (intracranial sinus thrombosis?)	1
Congenital syphilis	1
Congenital heart disease	1
Anoxemia (anesthetic)	1
Transfusion reaction	1
Intracranial vascular lesion	1
Cause not established	17

I have previously emphasized the fact that "teething," worms and adhesions of the foreskin or clitoris are not causes of convulsions. Delayed dentition is often associated with rickets. If spasmophilia follows, convulsions may supervene. Thus the delayed dentition and the convulsions are due to the same common cause but bear no other relation to each other.

The medical profession is responsible, if not for the origin, at least for the persistence of the common misconceptions of the causes of convulsions. The physician must realize that a convulsion is only a symptom but nevertheless a serious one which demands a most thorough study of the patient and a determined effort to find the cause. The importance of a complete history cannot be overemphasized. For example, a history of prematurity suggests a 75 per cent possibility of some degree of intracranial hemorrhage or injury.[15] It also connotes a strong possibility of later rickets and hence spasmophilia. A prolonged difficult labor, extreme molding of the head, cyanosis and lethargy, difficulty in nursing or asphyxia pallida suggests a cerebral injury which is a potential cause of convulsions. The convulsions may occur immediately or as long as nine years later. On the other hand, a rapid precipitate labor may cause intracranial hemorrhage with consequent symptoms.

A history of an acute upper respiratory infection or of fever followed after an interval by increased irritability, twitchings, convulsions and increase in skull circumference suggests a subdural hematoma or a meningitis followed by hydrocephalus.

It is sometimes difficult to evaluate the seriousness of the many injuries and falls sustained in childhood. I have seen an infant with a hemorrhage of the middle meningeal artery which resulted from a 2 foot fall out of a hammock onto a lawn. Another infant fell out of a buggy onto a lawn and sustained a skull fracture. Undoubtedly many falls result in cerebral injury which may escape recognition at the time.

The typical epileptic patient presents the history of recurring grand or petit mal seizures gradually increasing in frequency and severity. Most mothers can forecast a convulsion in the epileptic child by the change in his behavior. This change is usually described as some vague, indefinite peculiarity which has never been verified clinically or by any physical or chemical means. In 1930 Krasnogorski [16] reported that in some epileptics the conditioned reflexes disappeared as long as two days before attacks. Recently it has been demonstrated that the electro-encephalogram reveals variations in tracings for hours preceding a convulsion.[17]

A description of the seizure may be of great value in arriving at a diagnosis. The increasing irritability, facial twitchings and then carpopedal spasm in an infant with rickets is typical of spasmophilia. The "locked jaw" and "facies tetanica" with retained consciousness are well known to all who have seen tetanus. The typical grand mal seizure of epilepsy is common knowledge. However, not over half of the children have auras or involuntaries. The "fever convulsions" always develop when the body temperature reaches a certain individual high point. There is no aura and usually when the fever is reduced the convulsion ceases (table 6).

A study of the moving pictures of the various types of convulsions illustrates many points in differential diagnosis which are difficult to describe.

TREATMENT

The immediate treatment of the convulsions presents an acute problem. If there is an associated high fever, cold packs or cool sponges should be used. A cool hypertonic saline enema may also be given. Magnesium sulfate may be used in 25 or 50 per cent solution. If this is not available, sodium chloride or sugar may be used in the same percentage. These procedures are safe and will keep the mother occupied until further assistance is provided. Probably more harm has been done with hot baths or hot packs than with neglect. When facilities permit, a spinal puncture should always be done. Whether the fluid is under pressure or not, the drainage will be of therapeutic value and the examination of the fluid will be of great assistance in making the diagnosis. The most effective, practical and rapid

TABLE 5.—*Convulsions from 3 to 10 Years (25.1 per Cent of Total)*

	Cases
Idiopathic epilepsy	110
Acute infection	61
Cerebral birth injury residue	22
Encephalitis, all types, acute and chronic	12
Brain injury, traumatic	11
Meningitis (streptococcic 3, influenzal 2, tuberculous 1)	6
Brain tumor	5
Tetanus	4
Cerebral agenesis	2
Uremia	2
Insulin reaction	2
Hydrocephalus	1
Congenital syphilis	1
Congenital heart disease	1
Gastro-enteritis (intracranial sinus thrombosis?)	1
Cerebral edema (nephrosis)	1
Pertussis	1
Malaria	1
Cause not established	7

14. Seevers, M. H.; Cassels, W. H., and Becker, T. J.: J. Pharmacol. & Exper. Therap. **63**: 33 (May) 1938.

15. Glaser, Jerome: The Cerebrospinal Fluid of Premature Infants, Am. J. Dis. Child. **36**: 195 (Aug.) 1928; **40**: 741 (Oct.) 1930.

16. Krasnogorski, N.: Psychology and Psychopathology in Childhood, Acta pædiat. **11**: 499, 1932.

17. Gibbs, F. A.; Gibbs, E. L., and Lennox, W. G.: Epilepsy: A Paroxysmal Cerebral Dysrhythmia, Brain **40**: 377 (Dec.) 1937.

treatment of any convulsion, particularly of continuous convulsions, is the prompt administration of chloroform by inhalation. A vial of fresh chloroform should always be available to every physician called on to treat convulsions. While there is an element of danger in its use, the possibilities of harm are not nearly as great as is the injury to the brain resulting from a continuation of the convulsion. Morphine or opium or even chloral may be more dangerous than chloroform if they are improperly used. Opium derivatives should never be used to treat convulsions. They mask symptoms, depress the respiratory center and diminish or stop peristalsis.

After spinal drainage and chloroform, the drugs of choice are magnesium sulfate, soluble phenobarbital and chloral. Magnesium sulfate may be given in 50 per cent solution by mouth or in a retention enema. It may also be given in from 25 to 50 per cent solution intramuscularly or, for immediate action, in 25 per cent

TABLE 6.—*Convulsions from 10 to 16 Years (5.6 per Cent of Total)*

	Cases
Idiopathic epilepsy	37
Encephalitis, all types, acute and chronic	6
Cerebral birth injury residue	3
Cerebral agenesis	2
Congenital syphilis	2
Tetanus	2
Meningitis, meningococcic	1
Hysteria?	1
Hemangioma of face and brain (Lindau's syndrome)	1
Cerebral hemorrhage (scurvy)	1

sterile solution intravenously. The dosage will depend on the age and weight of the child. From 60 to 180 cc. may be given by mouth or rectum, from 5 to 20 cc. intramuscularly or from 5 to 10 cc. intravenously. The injection by vein should be given slowly. The dose should be repeated every four to six hours for from twenty-four to forty-eight hours. The amytal preparations are little used. The convulsions associated with high fever may be controlled with cool sponges, packs or enemas. The convulsions of spasmophilia may be treated with calcium chloride solution by mouth or intravenously.

The aim of immediate treatment for convulsions is to reduce intracranial pressure, remove all irritation and remove the cause when possible. The physician must also keep in mind that a convulsion produces serious injury to the brain. After the convulsion the child should be treated as in every cranial injury with absolute bed rest and quiet for several days. This point is usually overlooked and neglected.

Recurring convulsions present another problem which will not be considered in detail here. In cerebral birth injury, chronic encephalitis and posttraumatic cerebral injury phenobarbital is the drug of choice. In my experience there is no substitute drug. I have observed no instance of habit formation, increased tolerance or permanent injury resulting from its use. In idiopathic epilepsy the ketogenic diet remains the treatment of choice. For petit mal there is no other effective treatment. Most of the reported failures of the ketogenic diet are due to two factors: first, an attempt to treat organic lesions of the brain, and, second, a lack of understanding of the diet which results in a nonketogenic diet. No physician would ask a dietitian or a nurse to put a patient on a diabetes or a nephritis diet, but I have seen many epileptic patients who have been referred to the diet kitchen for treatment with a "ketogenic diet." The result has usually been failure.

SUMMARY

A convulsion is one of the most important symptoms in childhood. The frequency of convulsions in young children has a definite pathologic basis. Every effort should be made to determine the cause as soon as possible. The first step is a detailed history. The causes of convulsions in a series of 1,000 cases observed in a private and hospital practice were classified. This classification is of value in making a diagnosis. Every convulsion produces cerebral injury. Therefore after the convulsion the child must be kept at rest in bed until entirely recovered.

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ABSTRACT OF DISCUSSION

DR. HENRY F. HELMHOLZ, Rochester, Minn.: It is important to know what diseases are likely to be associated with convulsions in the various age periods, and it is of value to have the results of Dr. Peterman's experience. Some variations are to be expected with a different series of observations. Dr. Peterman has recorded no instance of hypoglycemic convulsions or those due to acute nephritis independent of uremia or lead poisoning, all of which are bound to occur sooner or later. This does not interfere with the rough estimation of the likelihood of convulsions at various age periods. The group which seems to me to be unusually large is that labeled "acute infection." This is a large group which, like most of the other groups, represents convulsions of unknown origin which an attempt is made to classify more accurately. It is evident that the correlation of convulsions with diseases is not entirely sufficient because it does not really consider the causative factors of convulsions. It has been the experience of many physicians that in infancy, and even later in childhood, a child with latent tetany may have a convulsion with the onset of an acute febrile illness. In the first attack other symptoms of tetany and a lowered blood calcium may be found. In later attacks this may not be present. It seems reasonable, however, to attribute the convulsion to tetany, particularly when all the members of a family are similarly affected. That is one thing which must be taken into account, namely, that tetany as we see it in families that are predisposed to this disease may be prevented by the administration of cod liver oil, and yet acutely, with the onset of an infection, a convulsion supervenes. In other words there may be no definite evidence of tetany and yet we know from experience that these families are susceptible to convulsions at the onset of a high fever. Hypoglycemia too can at the onset of acute illness bring about convulsions, as reported by Josephs. What other factors, such as alkalosis or superhydration, may play a role, is not known. I am not as optimistic as the author when he says that a survey of the tables reveals a logical basis for most convulsions and obviates the necessity for theorization. We are still far from that point. I have been interested in epilesy for many years and I am still at a loss to know what causes a convulsion. One other matter, that of therapy. I wonder whether there is the indication for a spinal puncture in all cases of convulsions associated with a febrile onset. In 34 per cent of Dr. Peterman's series, convulsions were associated with acute infections, not of the brain or meninges, so of questionably diagnostic or therapeutic value. In addition to the drugs mentioned, I think the reported experience with dilantin makes it deserving of mention.

DR. H. R. COODER, Los Angeles: Dr. Peterman's paper will be of interest to everybody who has to treat children for epilepsy. It has been of unusual interest to me because of my attempt to solve some of these problems that we have had for ten years in Los Angeles, in the Children's Hospital, where we have a series of about 600 patients. The part that appeals to me most is the analysis of causes. This is more than a statistical table. It is of real help. I try never to forget that the questions parents want answered are, first, how did my child get this thing? Second, what is going to become of it? We get help from inspecting these tables of causes as they are presented for different ages. We can satisfy ourselves as to what are the causes, but more useful is the way the parents

can be answered as to the prognosis. When the child is 3 or 6 months old, in this age of hazards of childhood, we can say to a parent "The most likely things your child has are things that can be cured, and if the primary disease can be cured, then the convulsions that go with it can be cured." This is one thing at 3 years of age and quite another at 16 or 12 years of age, when idiopathic epilepsy becomes the majority in diagnoses. I would question the diagnosis of spasmophilia in such a high percentage of cases. I do not see it in Los Angeles. I asked a number of my colleagues if they were seeing much spasmophilia and they said they had not seen any for a long time. I too have seen only one or two cases of hypoglycemia. I feel with Dr. Peterman that phenobarbital and dilantin are the most useful forms of treatment. Dr. Peterman could have mentioned other things of interest, for example the emotions of the young child, the training and boarding out of cases and neurosurgery. I congratulate Dr. Peterman on the scope and understanding of this paper.

DR. CLIFFORD SWEET, Oakland, Calif.: I agree with Dr. Peterman that acute infections with high fever play a large part in causing the convulsions which a child experiences for one or a few times and then no longer has convulsions if he is properly taken care of or arrives at a later age. When a child does have an acute convulsion for which the cause is not immediately apparent or in which there is probably an apparent cause, such as an inflamed throat and high fever, I think physicians should be especially careful not to use the word "epilepsy" to that poor mother. Let's not use that term when we speak to the mother about the acute convulsion which has no great chance, at least, of being epilepsy. I think also we should not emphasize the inherited phase of epilepsy. I think the tendency to have epilepsy, the tendency to have convulsions, the tendency to have heart disease or lung disease or any other kind of disease, runs in certain strains of human beings. Supposing a child has had a serious birth injury, and one of the sequelae of that is convulsions. Should that child's parents be told that he is, by inheritance, a defective individual and that therefore their other children may be passing on a defective strain of heredity? I don't think so. I don't know the cause of epilepsy any more than the rest of you do, but I am convinced it is often based on some kind of injury, perhaps from disease. A convulsion, Dr. Peterman has told us, is in itself injurious to the child, and I am certain it is. Therefore when we see a child who has a convulsion we should use every means in our power to prevent that child from having another convulsion. The intelligent mother can generally notice that the child is showing signs which she learns to recognize as the prodromal signs of a convulsion, and that is the time for her to start hydrotherapy, a deep, warm, comfortable bath, a warm, wet pack. There is one trick about a warm, wet pack. If you put a child on the verge of delirium on a warm, wet pack and bind his arms to the sides of his body, he will fight like a wildcat. If you leave his arms free and put the wet pack over the rest of him, he won't mind in the least. I have found ethyl chloride the best means, I think, of relieving the convulsion immediately. The means of prolonging sedation that I think is most useful is one of the barbiturates. After I know the child's tolerance for sodium amytal, if the mother is intelligent and reliable I leave in her house some suppositories or capsules of sodium amytal which she may insert in the child's rectum the next time a convulsion threatens. Roughly, a child can take half a grain of sodium amytal by rectum for each year of his age with safety.

DR. M. G. PETERMAN, Milwaukee: My attempt at classification is not an attempt to explain the physiologic basis or mechanism of the convulsion. I am not able to do that, and I feel, as the other gentlemen do, that the exact mechanism of the convulsion is unexplained. But I did classify the diseases with which the convulsions were intimately associated. There are cases of acute hemorrhagic nephritis in this series, but they are listed under the acute infections. The question of hypoglycemia remains to be settled. Often children are seen with hypoglycemia, with blood sugars of 60 or 70, and certainly in children who are vomiting, who miss meals, frequently the blood sugar gets down to 60 or lower, who do not have convulsions. The child who has convulsions when his blood sugar gets down must have a lower threshold for convulsions, and that must be due to some other cause. There may be some question about the advisability of routine spinal puncture, but if one can make an early diagnosis of meningitis or of juvenile dementia paralytica or tabes with the spinal fluid one is hesitant to let this important diagnostic measure go in any case. As for dilantin, I have used it for a year. I did not mention it because I seem to be among the few who have not had favorable results. In my experience dilantin has not been satisfactory, and when I have not changed my patients back to phenobarbital most of them changed back themselves. These cases of spasmophilia represent established cases in which there were low blood serum calcium and increased phosphorus. I did not believe there was infantile tetany until a few years ago, when we began demonstrating cases in which the serum calcium was low, cases which responded to treatment and in which there were no convulsions after the calcium was brought to normal. The diagnosis of epilepsy is, to me, always a temporary, provisional diagnosis. Subsequently, something may develop in the history or in the examination which would cause me to change the diagnosis any time there is evidence of organic disease and thus leave the diagnosis of idiopathic epilepsy a diagnosis made by exclusion. The importance of the hysterical element or psychic element in convulsions is difficult to estimate. I think it would be better never to accuse a child of hysteria, and make a mistake occasionally, than to attempt to make the diagnosis. There is no question that an epileptic child may have a seizure precipitated by any number of psychic factors or emotional disturbances. Particularly the child with petit mal may have a whole series of seizures precipitated by an unpleasant experience, but there is a basic cause behind it all, and that is an inherited constitutional inferiority as mentioned by Dr. Sweet.

PROTAMINE AND ALLERGY

I. NATURE OF THE LOCAL REACTIONS AFTER INJECTIONS OF PROTAMINE ZINC INSULIN

II. INDUCTION OF SENSITIVITY TO INSULIN BY INJECTIONS OF PROTAMINE ZINC INSULIN

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The injection of protamine zinc insulin for the treatment of diabetes is followed in some patients by redness and swelling at the site of injection, sufficiently severe at times to lead them to discontinue the use of protamine zinc insulin. It therefore seemed desirable to investigate the nature of these reactions, especially from the standpoint of a possibly allergic mechanism. We here record our observations as to the causes and report a new observation, the induced sensitization to insulin which occasionally appears to follow the use of protamine zinc insulin.

SENSITIVITY STUDIES

The first part of this paper deals with the results of intracutaneous tests with protamine. The test material used was a solution of protamine in Coca's solution in a concentration containing 0.1 mg. of nitrogen per cubic centimeter. The tests were performed by the intracutaneous injection of 0.02 cc. of the test solution on the flexor surface of the forearm, the reaction being read in fifteen minutes.

With three diabetic patients who had complained the most of trouble at the site of injections of protamine zinc insulin, tests were also performed by injecting a larger amount, 0.05 cc., of the test solution and reading

The protamine used in our tests and experiments was furnished by Eli Lilly & Co.
From the Allergy Section, Division of Medicine, of the Hospital of the University of Pennsylvania.

the reaction also after twenty-four hours. The test subjects included (*a*) 104 consecutive diabetic patients who were or had been receiving protamine zinc insulin in daily amounts ranging from 5 to 100 units and for periods ranging from one week to eighteen months, (*b*) 100 nondiabetic, presumably normal controls and (*c*) eight allergic persons who in the course of routine testing had been found skin sensitive to salmon protein. It is noteworthy that of the 104 diabetic patients seventeen experienced sore arms or legs after injections of protamine zinc insulin, because of which four had discontinued this treatment.

There was no positive reaction in any subject of the three groups tested intracutaneously with a protamine solution containing 0.1 mg. of nitrogen per cubic centimeter.

It appears therefore that sensitivity to protamine could not be invoked as an explanation for the local reactions experienced by the seventeen diabetic patients from injections of protamine zinc insulin. It is also evident that protamine differs sufficiently in composition from salmon muscle protein extract as to be unable to provoke an intracutaneous reaction in persons known to be sensitive to such extract.

These observations are in accord with what one would expect in the light of existing information: The protamines [1] are sulfur-free, strongly basic substances, rich in nitrogen and of high molecular weight. They consist chiefly of diamino acids (up to 90 per cent of the total nitrogen is diamino acid nitrogen), mainly arginine. They occur in the spermatozoa of many fish species, where they are bound to nucleic acids. The protamine bases are easily soluble in water, give the biuret reaction and do not coagulate on boiling. The protamine salts are precipitated by the alkaloidal reagents (phosphotungstic acid, sodium tungstate).

Salmine is the protamine obtained from salmon sperm. On hydrolysis it yields arginine (87 per cent) and several other amino acids, none of which contain the phenol ring. We found that a weak aqueous solution of salmine was not precipitated by half-saturated ammonium sulfate solution but was precipitated by saturated ammonium sulfate solution.

Taylor [2] found no evidence of antibody formation in rabbits inoculated with the protamine of salmon sperm.

Wells [3] stated that "the protamines, which consist chiefly of complexes of diamino acids with but a small total quantity of a few of the monoamino acids of proteins, are devoid of antigenic activity. This fact also suggests that the diamino acids are not of importance in respect to antigenic function."

It seemed wise, however, further to test the possibility of the antigenic capacity of protamine by attempting to produce sensitivity experimentally.

GUINEA PIG EXPERIMENTS

One guinea pig was given an intravenous injection of 1 cc. of a solution of 2 mg. of protamine (salmine) in sterile water. The animal experienced no obvious toxic symptoms. Three guinea pigs were given intraperitoneal injections of 1 cc. of a solution containing 2 mg. of protamine in sterile water, without experiencing toxic symptoms. All four guinea pigs were given two additional injections of 2 mg. of protamine at three day intervals. Two weeks after the last intraperitoneal injection each guinea pig was given an intravenous injection of a solution of 1 mg. of protamine in sterile water (0.5 cc.) in an attempt to produce anaphylactic shock. This injection was given without the aid of an anesthetic, lest the anesthesia have an antianaphylactic effect. In no instance was there any evidence of resultant anaphylactic shock.

It is pointed out that the dose of protamine used in attempting to produce sensitivity in the guinea pigs proportionately far exceeded the amounts of protamine used in treating diabetic patients.

THE NATURE OF LOCAL REACTIONS AFTER INJECTIONS OF PROTAMINE ZINC INSULIN IN DIABETIC PATIENTS

Of 104 consecutive diabetic patients being treated with protamine zinc insulin, seventeen complained of local reactions at the site of injections. For the most part these reactions were slight, consisting of moderate redness and induration at the site of the injection and lasting a few hours. Sometimes, however, the reaction was more severe, persisting as long as several days and causing considerable discomfort. Four patients refused further injections for a time. It was next attempted to trace in each of the seventeen cases the possible cause for the reactions experienced.

In practically all instances it was observed that the local reaction followed the first injection of protamine zinc insulin. This proves that the reaction could not have been due to a sensitivity induced by preceding injections of the material.

In three cases it was observed that the local reaction occurred only after some injections, not after all. Obviously, were the reaction due to sensitivity it would have followed every injection.

In four cases in which reactions were experienced only after self administration of the protamine zinc insulin, it was found that the injection, instead of being subcutaneous, was actually made into the superficial layers of the skin. When the same patients were given injections subcutaneously by a physician or a nurse, no reaction resulted.

Careful questioning of eight additional patients suggested that a too superficial injection was probably a factor in the reactions which they experienced from their earlier injections. All eight eventually experienced no reactions from the subcutaneous injections which they were receiving daily during ten or twelve months.

Another possible factor in causing local reactions in some of the last-mentioned eight cases was the use of alcohol instead of boiling as the sterilizing agent for the hypodermic outfit. It should be emphasized that patients must be specifically warned against sterilization with alcohol of needle and syringe.

Yet another cause for a local reaction in one of these eight cases was infection, traced to gross error in aseptic technic.

One patient had left the clinic and could not be traced.

In the remaining case the local reactions differed from those in the other sixteen in that they occurred promptly after injection, as would be the rule with an allergic response, and were attended by purpuric lesions at the site of injection. The reactions had, however, first been noted with old insulin and before the begin-

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ning of treatment with protamine zinc insulin. The patient was tested intracutaneously with beef insulin, with pork insulin, with protamine zinc insulin and with protamine alone. There were prompt and decided reactions with beef and pork insulin, a lesser reaction with protamine zinc insulin and a negative reaction to protamine. The reactions were therefore due to insulin sensitivity, which had developed during insulin treatment and before the use of protamine.

It is of interest to note that the nonthrombocytopenic purpura was an allergic manifestation of the insulin sensitivity.

PROTAMINE AND THE DEVELOPMENT OF INSULIN SENSITIVITY

Since studying the aforementioned group of patients, we have encountered two diabetic patients in whom the use of protamine zinc insulin was followed in from five to eight days by the development of true sensitivity to insulin:

CASE 1.—J. L., a Jewish man aged 64, in whom diabetes developed when he was 50 years old, received insulin periodically for eight years without experiencing any difficulties. June 10, 1938, treatment with protamine zinc insulin was started, 10 units once a day. For a week he experienced no untoward effects, but on the eighth day and thereafter there occurred immediate and marked local reactions with redness and wheal formation at the site of injection and generalized urticaria. An intracutaneous test with protamine zinc insulin gave a weak local reaction. Intracutaneous tests with beef insulin, pork insulin and crystalline insulin all gave typical strongly positive reactions, showing that he was sensitive to the crystalline insulin itself.

CASE 2.—Mrs. C. T. A., a diabetic patient aged 54, admitted to the hospital June 25, 1937, in the service of Dr. T. Grier Miller, during the first five days after admission received from 40 to 50 units of insulin daily without experiencing any local reactions. June 29, 1937, treatment with protamine zinc insulin was begun in a dose of 30 units once a day. After five days the injections were followed by immediate reactions at the site of injection, growing progressively worse after each dose, so that the use of protamine zinc insulin was discontinued and treatment with insulin substituted. Nevertheless the immediate local reactions continued to occur at the site of injection, decreasing slightly in intensity during the weeks that followed. November 10 the patient was tested by intracutaneous injections with beef insulin, pork insulin, protamine zinc insulin and a plain protamine solution. The reaction to protamine was negative, but moderately positive reactions to beef and pork insulin and strongly positive reactions to protamine zinc insulin were obtained.

In addition to our two cases, we have knowledge of one further case in which insulin sensitivity developed soon after the substitution of protamine zinc insulin for insulin.[4]

In these cases it is strongly suggested that the addition of protamine to insulin was in some way responsible for the development of true sensitivity to insulin.

There is evidence to show that the addition to a true antigen of a substance itself possessing no antigenic properties makes it easier to sensitize an animal to that antigen than by the injection of the antigen alone. Harrison [5] found that guinea pigs could be fairly easily sensitized to ragweed by means of an alum-precipitated ragweed pollen extract. Caulfeild, Brown and Waters [6] had experienced difficulty in producing high degrees of sensitivity to ragweed in guinea pigs with ragweed extract alone, less than 10 per cent of the animals having fatal anaphylactic shock on reinjection. When they used an alum-precipitated ragweed extract, every guinea pig acquired a high degree of sensitivity and over 70 per cent died of anaphylactic shock on reinjection. Caulfeild and his associates suggested that this might have been due to the delayed absorption and the consequently prolonged action of the insoluble alum precipitate of ragweed.

There appears to be a certain analogy, although by no means a complete parallelism, between the alum-ragweed method of inducing ragweed sensitivity in guinea pigs and the possible induction of insulin sensitivity by injections of protamine zinc insulin. In each instance, the antigen (ragweed, insulin) is rendered insoluble and its absorption time prolonged. The ragweed precipitate, however, is highly insoluble, taking weeks to be absorbed, and the guinea pig is rather easily sensitized; consequently ragweed sensitivity, and one of high degree, usually results. The insulin precipitate, on the other hand, is only relatively insoluble, being absorbed in from twelve to thirty-six hours, and man is not nearly so easily sensitized as is the guinea pig; consequently insulin sensitivity, while it may develop more often after injections of protamine zinc insulin than after injections of insulin alone, is induced only rarely.

The fact remains that such induction of insulin sensitivity does follow the use of protamine zinc insulin, and in persons whom injections of insulin alone had failed to sensitize. The possibility of the development of insulin sensitivity during the use of protamine zinc insulin should therefore be kept in mind by physicians treating such patients.

SUMMARY AND CONCLUSIONS

1. Local reactions at the site of injections of protamine zinc insulin are sufficiently frequent (occurring in 16 per cent of our series of cases) to assume some clinical importance.

2. These reactions are probably not due to sensitization to protamine, because we obtained negative intracutaneous reactions with a protamine solution in 104 diabetic patients treated with protamine zinc insulin and in eight allergic nondiabetic patients who were sensitive according to cutaneous tests to salmon muscle protein.

3. This is in keeping with existing knowledge that protamines have no antigenic properties and is further confirmed by our inability to induce sensitivity to protamine in guinea pigs.

4. The reactions appear to be due to errors in technic of injection: (*a*) usually a too superficial (i. e. intracutaneous) injection of the material, (*b*) at times irritation by alcohol when that substance has been used to sterilize the hypodermic outfit and (*c*) occasionally to infection, the result of faulty aseptic technic. The errors have occurred as a rule when the material was injected by the patient himself.

5. Two patients became sensitive to insulin five and eight days respectively after protamine zinc insulin was substituted for insulin in the treatment of diabetes.

6. It is suggested that the insulin sensitivity was induced as a result of the more prolonged action of the antigen (insulin) in the course of its slower absorption from a precipitated state.

Thirty-Sixth and Spruce streets.

4. Perlman, F.: Personal communication to the authors.
5. Harrison, W. T.: Pub. Health Rep. **49**: 462, 1934.
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CHRONIC BRUCELLOSIS IN CHARLOTTE, N. C.

REPORT OF CASES

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That brucellosis is a disease of protean manifestations was recognized by Hughes [1] in his classic description. Simpson,[2] Gentry,[3] Hardy,[4] Bierring [5] and Woodward [6] have described its varied symptoms more recently. Hamman and Wainwright [7] emphasized the importance of considering brucellosis in cases of unexplained pyrexia. Parsons and Poston [8] recently described four cases of brucellosis in which lymphadenitis was the outstanding feature. One case terminated fatally, and a detailed description of the postmortem observation was given. Every writer on the subject of brucellosis emphasizes the difficulty of diagnosis.

In general, brucellosis may be divided into two clinical types, the acute and the chronic. In the acute type the onset may be sudden or gradual; the fever tends to be intermittent or undulating. Chilliness is common; often there are actual rigors with drenching night sweats. Joint and muscular pains, anorexia with loss in weight, splenomegaly and leukopenia with relative lymphocytosis are common. These signs, together with the presence of a high agglutinin titer, may form a fairly characteristic clinical picture. The cases to be described illustrate the paucity of signs in the chronic disease.

Evans [9] recently reviewed the literature on chronic brucellosis, and Meyer [10] directed attention to the latent types of Brucella infection. These authors and others cited by them have brought forth evidence indicating that the chronic and latent types of infection are more common than is generally recognized. In an earlier paper Evans [11] called attention to the analogy between the mild chronic form of the human disease and latent infections in apparently healthy cattle, goats, hogs and other domestic animals.

Huddleson [12] observed that in children the acute type of brucellosis is rare and the chronic type more common. This fact, together with the infrequency of a good titer of agglutinins in infected children, may account for the impression that children are immune. Anderson and Pohl,[13] Pray [14] and Dietrich and Bonynge [15] have described the mild type of the disease in children.

On account of the evidence summarized elsewhere [9] that chronic brucellosis may be a common disease, the National Institute of Health planned several field investigations to obtain data which might give information on its incidence. As a part of the general program, the senior writer conducted a field investigation of the subacute and chronic forms of brucellosis in Charlotte, Mecklenburg County, N. C., during the summer and fall of 1936.

Charlotte, located in the southwestern part of North Carolina, is an industrial and dispensing center, with dairy farming, tobacco and corn raising in the surrounding country. This city, of approximately 107,000 inhabitants, was chosen as one of the survey areas because 81 per cent of milk was sold raw and the herds of cows supplying milk to the city were known to be infected with contagious abortion.[16] Previous to the survey only seven cases of brucellosis had been recognized in Charlotte.

Simultaneously with the survey of human brucellosis, a survey of the disease in the cattle of the vicinity was carried on under the direction of Dr. A. A. Husman of the United States Department of Agriculture and Dr. William Moore of the North Carolina Department of Agriculture. Their survey was a part of the extensive program of the United States Department of Agriculture for the eradication of Bang's disease in cattle. It was their practice to test each herd every month by means of the agglutination test, eliminating positive reactors until the herd was free from Bang's disease. Thereafter follow-up tests were made three or four times annually. In the original tests on 4,096 cows, 15 per cent were found to be positive reactors. In subsequent tests the figure reached 23 per cent. Thus the percentage of reacting cows in the vicinity of Charlotte was higher than the average of about 14 per cent in infected herds reported by Wight [17] for the United States as a whole.

In a survey of human brucellosis, the possibility of infections contracted from hogs and goats as well as from cattle must be considered. The variety of the causal organism which infects hogs (Brucella suis) and the variety which infects goats (melitensis) are more virulent for man than the variety which most commonly infects cattle (abortus). That cattle may become infected with the caprine variety and transmit the disease to man was shown by Taylor, Vidal and Roman [18] and Meyer and Eddie,[10] and that cattle may become infected with the porcine variety and transmit the disease to man was shown by Atwood and Hasseltine [19] and Beattie and Rice.[20] That brucellosis may be contracted by the ingestion of infected cow's milk has been

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20. Beattie, C. P., and Rice, Raymond M.: Undulant Fever Due to Brucella of the Porcine Type—Brucella Suis: Report of a Milk-Borne Epidemic, J. A. M. A. **102**: 1670-1674 (May 19) 1934.

shown by Carpenter and King,[21] Hardy,[4] Dooley,[22] Hasseltine and Knight,[23] Wilcox,[24] Starr and Maxcy,[25] Cameron and Wells[26] and Johns, Campbell and Tennant.[27]

Dr. Husman reported that two lots of hogs and two lots of goats in the vicinity of Charlotte were tested and found free from infection. Moreover, none of the subjects of our study had a history of having used goat's milk, and none had contact with either goats or hogs. Nevertheless, studies of the infection in human beings showed that the caprine and the porcine varieties of Brucella melitensis may be the causal agents of human infections in the vicinity of Charlotte. Both Evans[28] and Poston[29] found evidence that in a large proportion of cases in human beings in this area the infection is with the caprine type of the organism (Brucella melitensis). A number of the patients in Charlotte were found to have agglutinating titers high enough to produce satisfactory agglutinin absorption reactions. Evans[28] studied serums from seven of these patients and found that in five of them (71.4 per cent) melitensis antigen absorbed the agglutinins completely, but an abortus antigen failed to absorb all the specific agglutinins, indicating that the infecting organism was Brucella melitensis. Poston[29] cultivated Brucella from five of the patients in Charlotte. The organisms were identified by means of the agglutinin absorption and bacteriostatic dye tests. The strains from three patients were of the melitensis variety, from one of the suis variety and from one of the abortus variety. Since none of the patients had contact with goats or hogs and all drank raw milk from infected herds of cows, the circumstantial evidence suggests that some of the cows supplying milk to Charlotte may be infected with the melitensis or suis variety. As yet there has been no opportunity to make a bacteriologic study of infected cattle in the vicinity of Charlotte.

The survey was conducted among the urban population, with Brucella contacts generally limited to the ingestion of milk and dairy products. The search was made chiefly among patients suffering from chronic unexplained ill health, particularly among those with long continued low grade fever. A few patients with psychoneuroses and a few who had had unexplained abortions were included. The opportunity to get in touch with suitable patients was provided by local physicians in response to the request of the field worker (F. H. R.) to be permitted to assist in a study of cases of obscure disease. Although 325 cases were studied, the survey of the city was incomplete because it could cover only that portion of the population financially able to employ physicians capable of making the necessary expensive examinations for a differential diagnosis in the case of a mild disease of obscure origin. Hence not only was the survey incomplete but the group studied was not representative of the entire locality. Less than 10 per cent of the patients belonged to the lowest third of the population in terms of income and living conditions. Moreover, among the patients with chronic disease who were examined there may have been some with brucellosis which failed of recognition.

The cases were chosen for study because they presented clinical pictures suggesting brucellosis without regard to whether or not specific tests gave positive reactions. Therefore this group differs from groups of cases of brucellosis usually reported. As a rule, other observers of chronic brucellosis have considered the patient's complaints as due to Brucella infection only after positive results of laboratory tests have prompted an investigation. This approach tends toward overestimation of the diagnostic value of laboratory data in cases of the chronic disease. The inadequacy of the specific tests was discussed in an earlier paper.

CLINICAL STUDY

The following diagnostic procedures were used: history taking, physical examination, x-ray examination of the chest, urinalysis, hemoglobin determination, erythrocyte count, total and differential leukocyte counts, agglutination tests with Bacterium tularense, Brucella abortus and Brucella melitensis antigens, opsonocytophagic test, cutaneous test with a 1:10,000 dilution of Huddleson's brucellergin and, with children, cutaneous test with tuberculin (0.1 and 1 mg.). Evans[9] has described the technics used for the specific tests. In a few cases cultural studies were made; they were reported by Poston.[29]

Among the 325 cases studied in Mecklenburg County, a definite or probable diagnosis of brucellosis was made in twenty-two. The cases may be divided into three groups: 1. In five cases the causal organism was obtained from the blood and the diagnosis was regarded as proved. 2. In nine cases the tentative diagnosis of brucellosis, made on clinical bases, was supported by a positive agglutination reaction. (In four cases the titer was 1:160 or higher, in three cases it was 1:80 and in two cases it was 1:40.) 3. In eight cases a diagnosis of probable brucellosis was made despite the fact that specific tests failed to confirm the clinical evidence of Brucella infection. The summarized data on all twenty-two cases were given in a previous paper.[30]

CASES IN WHICH THE CAUSAL ORGANISM WAS OBTAINED

Cultural examinations and inoculations of guinea pigs were made only in cases in which physical signs of disease and a significant agglutinin titer were absent but the history was suggestive of chronic brucellosis. Thirteen such cases were chosen for bacteriologic examinations, and positive cultures were obtained in five. The technics used and the results of the examinations were recently reported by Poston.[29] In the cases in which positive cultures were not obtained, there was no opportunity to repeat the bacteriologic study. All five cases in Charlotte which were proved culturally to be of brucellosis are described here in detail.

CASE 1.—*History and Examination.*—M. C., a nurse aged 26, referred by Dr. Andrew Blair, when first seen, in July 1936, had as her chief complaints low grade fever, weakness and pains in the joints of four months' duration. The family history was irrelevant. Heretofore the patient had been in good health, having had only the usual childhood diseases. The menstrual history was normal. In an accident in December 1934 she had

21. Carpenter, Charles M., and King, Merrill, Jr.: Brucella Abortus in Milk and Its Relation to Undulant Fever, Am. J. Pub. Health, 1928, supp., pp. 1-11.
22. Dooley, Parker: The Incidence of Undulant Fever in Children, Arch. Dis. Childhood **6**: 235-238, 1931.
23. Hasseltine, H. E., and Knight, I. W.: Outbreak of Undulant Fever Traced to Infected Milk, Pub. Health Rep. **46**: 2291-2300, 1931.
24. Wilcox, Harriet Leslie: The Infection of Cows with Brucella Abortus Variety of Brucella from a Public Health Standpoint, Am. J. Pub. Health **22**: 1157-1166, 1932.
25. Starr, L. E., and Maxcy, Kenneth F.: Undulant Fever and Its Relation to Brucella Infection (Contagious Abortion) in Cattle and Swine, Virginia M. Monthly **60**: 218-227, 1933.
26. Cameron, W. Ross, and Wells, Marian: Undulant Fever Control in Washington County, Maryland, South. M. J. **27**: 907, 1934.
27. Johns, E. P.; Campbell, F. J. H., and Tennant, C. S.: A Serological and Clinical Investigation of Individuals Exposed to Brucella Abortus, Canad. M. A. J. **27**: 490-497, 1932.
28. Evans, Alice C.: The Distribution of Brucella Melitensis Variety Melitensis in the United States, Pub. Health Rep. **52**: 295-303, 1937.
29. Poston, Mary A.: Studies on Chronic Brucellosis: III. Methods Used in Obtaining Cultures, Pub. Health Rep. **53**: 1-4, 1938.
30. Evans, Alice C.; Robinson, Frank H., and Baumgartner, Leona: Studies on Chronic Brucellosis: IV. An Evaluation of the Diagnostic Laboratory Tests, Pub. Health Rep. **53**: 1507-1525, 1938.

suffered fractures of five ribs on the left side; recovery was uneventful. In the summer of 1935 she began to have attacks of jaundice associated with nausea without vomiting. These attacks occurred every few weeks, at first lasting only a few days, but, beginning in December, the jaundice persisted, unaccompanied by any other symptoms, until the onset of the present illness.

This illness began abruptly March 14, 1936, with a sudden chill followed by a temperature of 103 F. and night sweats. The patient was admitted to the hospital, where the chills and fever recurred daily for three weeks; weakness, headaches, anorexia and loss of weight were present for about six weeks. During two weeks of the hospitalization the patient was intensely jaundiced. She received two blood transfusions. Five weeks after the onset she returned home. She was weak and continued to have an afternoon elevation of temperature to 99.5 or 100 F. Finally the joints of her extremities became involved in arthritis, with pain on motion, redness, increased local heat and tenderness. The involved joints were chiefly those of the upper extremities: the middle phalangeal joints, wrists and shoulders. There were occasional headaches, chilly sensations, anorexia, insomnia and some tendency toward depression and irritability.

After leaving the hospital the patient noted that she had an occasional cough, which was generally nonproductive but occasionally produced a small amount of white, mucoid sputum. There was no hemoptysis, and the cough, though persistent, did not increase in severity. There was slight tenderness in the right upper quadrant of the abdomen.

In July examination revealed a temperature of 99.9 F., a pulse rate of 86, a respiratory rate of 20 and a blood pressure of 86 systolic and 62 diastolic. The patient was well developed and well nourished and did not appear ill. She was protecting her swollen right wrist. She was alert, cooperative and oriented, but depressed in respect to her illness. There was no local or generalized lymphadenopathy. The sinuses transilluminated well. The teeth were in good condition. The tonsils had been removed. The chest was symmetrical and the expansion good and equal. Breath sounds and the whispered and spoken voice were normally transmitted throughout. No rales were present. The liver, spleen and kidneys were not palpable. Examination of the extremities revealed limitation of motion of the fingers of the left hand because of pain, unaccompanied by local deformity. There were swelling, slight redness and increased local heat, together with pain on motion in the right wrist.

Course and Accessory Examinations.—At the onset of illness, four months previous to our examination of the patient, the agglutination test was performed and no Brucella agglutinins were found; an intradermal test with Brucella suspension produced erythema together with edema about the size of a 10 cent piece (18 mm.). X-ray examination of the chest disclosed nothing abnormal. A diagnosis of brucellosis was made, and the patient was treated with vaccine for about ten months. Nevertheless the symptoms did not subside. When we made an examination in July, after several months' vaccine treatments, the blood serum gave a positive agglutination reaction with the Brucella antigens in dilutions of 1:80. The opsonocytophagic test gave a weakly positive reaction. Intradermal tests with 0.1 cc. of 1:10,000 and 1:2,000 dilutions of brucellergin were negative.

During the fall of 1936 the patient continued to have pain, together with swelling in the joints of the extremities, particularly the wrists and the metaphalangeal joints of the fingers. Finally her left hip became excruciatingly painful. X-ray examinations on four subsequent visits showed increasing peribronchial infiltration with fibrosis, together with a spread of the normal hilar shadow. The x-ray appearances in this case have been reported by Lafferty and Phillips.[31] A gallbladder series showed a poorly functioning gallbladder without stones.

Serologic studies were made again in October and November. In October the two Brucella antigens were agglutinated in dilutions of 1:320 and the opsonocytophagic reaction was strong. In November the agglutinin titer had diminished somewhat and the opsonocytophagic activity was moderate.

Throughout the fall of 1936 the patient continued to have occasional cough, productive of a mucoid sputum which never became purulent or copious. At no time were changes observed in her chest on physical examination. In December 1936 Brucella suis was obtained from the blood and from the joint fluid of the right wrist. In March 1937, about three months after completion of this survey, the patient died. Unfortunately there was no postmortem examination.

Epidemiologic Data.—This patient had had no animal contacts. Agglutination tests on twenty-four cows of the herd supplying her with raw milk gave positive reactions for three.

CASE 2.—*History and Examination.*—E. C., a white woman aged 32, a housewife, referred by Dr. S. W. Davis, when first seen, in August 1936, complained of weakness of three months' duration. The family history was irrelevant. The patient had had fairly good health except for two episodes, to be mentioned presently. However, for many years she had been subject to moderate dysmenorrhea and for the past two years her periods had been rather irregular, with a gradual decrease in the menstrual flow but never a cessation. She regarded herself as always having been an extremely nervous person. About ten years before she experienced several febrile attacks, with weakness. Six years before she had a series of attacks of alternating diarrhea and constipation, accompanied by mucus, without blood or pus in the stools.

In June 1936 the patient noted increasing weakness. The afternoon temperature rose to 99.5 F. or higher on exertion. This elevation of temperature occurred daily except during occasional intervals of two or three days. The patient lost 6 pounds (3 Kg.) in one week because of anorexia. This weight was not regained during her illness. There were occasional night sweats unaccompanied by chills and without offensive odor. In the left arm and over the precordium there was a dull aching with occasional shooting pain. An occasional nonproductive cough was attributed to a postnasal discharge following an attack of allergic rhinitis.

Physical examination disclosed a temperature of 99.2 F., a pulse rate of 85, respiratory rate of 20 and a blood pressure of 110 systolic, 70 diastolic. The patient was rather thin and had a slight pallor. She was alert, intelligent and cooperative. There were no enlarged lymph nodes. The sinuses were clear. The teeth and pharynx were normal. The chest was symmetrical and the expansion good and equal. The heart was not enlarged. There were moderate sinus arrhythmia and a systolic murmur in the pulmonic region. The abdomen was soft; the liver and spleen were not palpable. The extremities were normal.

Course and Accessory Examinations.—The hemoglobin content was 76 per cent; the red blood cells numbered 4,300,000 and the white blood cells 12,200, with polymorphonuclears 78 per cent, lymphocytes 18 per cent, monocytes 3 per cent and basophils 1 per cent. Urinalysis gave negative results. Serologic tests gave a weak opsonocytophagic reaction and positive agglutination reactions with the two Brucella antigens in dilutions of 1:40. The intradermal test with brucellergin gave negative results.

The symptoms continued throughout August and September, although repeated physical examinations, including a pelvic examination, showed no abnormalities. X-ray examination of the chest gave normal results throughout the illness. Nonspecific shock treatments with injections of lactogen were given at weekly intervals. They were followed by a slight elevation of temperature and malaise lasting a few hours. The lactogen therapy was discontinued after six weeks because there seemed to be no improvement. The patient was then given concentrated liver extract with an initial dose of 3 cc. and succeeding doses of 1 cc. every three weeks for several months. During the liver therapy she showed marked general improvement, as evidenced by the fact that she was afebrile and able to be up all the time and complained only of occasional weakness. Serologic tests made during the recession of symptoms showed a very strong opsonocytophagic reaction and agglutination of the melitensis antigen in a dilution of 1:40.

About November 1 the former symptoms developed, with exhaustion and malaise so severe that she was obliged to return to bed. Depression was marked; afternoon temperatures rose

31. Lafferty, Robert H., and Phillips, Clyde C.: Pulmonary Changes in Patients Suffering from Malta Fever, South. M. J. **30**: 595-600, 1937.

to between 99.5 and 100 F. Moderate hypotension was present, the blood pressure being from 98 systolic, 68 diastolic to 84 systolic, 60 diastolic. Repeated physical examinations gave negative results. In December the patient was somewhat improved and started on a regimen of moderate activity. Serologic tests were repeated, and the opsonocytophagic test was found to be weakly positive; the agglutinin titer remained 1:40. From a guinea pig given an injection of blood in December, a culture of Brucella melitensis was obtained.

Epidemiologic Data.—The patient had had no animal contacts. She consumed raw milk from a herd of cows with a history of abortions. Agglutination tests performed on seventy-four cows of this herd gave positive reactions for twenty-one. A herd of goats was kept on the same farm with the cows.

CASE 3.—*History and Examination.*—W. W., a woman aged 33, a bank employee, referred by Dr. S. W. Davis, when first seen, in July 1936, complained chiefly of fever, weakness and malaise, which had persisted for seven months. The family and the past history were irrelevant.

Prior to Christmas of 1935 the patient had been in good health. At that time there developed an illness characterized by fever, weakness, general aching, exhaustion and dull frontal headache which persisted for two months and was considered to be "flu." About four months later the menstrual flow increased, with occasional passage of clots of blood. The patient had returned to work, however, and felt well until May 1936, when she had an attack identical with the first, lasting two weeks. The maximum temperature during these episodes was 101 F. The symptoms subsided for about a month. She was then forced to go to bed again because of extreme exhaustion. Anorexia and fever developed, together with constipation, insomnia, nervousness, irritability and profound depression. She noted a sensation of suffocation and fear of closed spaces. She lost about 10 pounds (4.5 Kg.) during four weeks of illness. During the interval between attacks she had been afebrile, to the best of her knowledge, but she noted increasing difficulty in doing her work because of weakness, nervousness and irritability. During the second attack an occasional cough productive of a scanty mucoid sputum developed, which persisted throughout the illness.

Physical examination disclosed a temperature of 99.8 F., a pulse rate of 84, a respiratory rate of 20 and a blood pressure of 112 systolic, 68 diastolic. The patient was well developed and well nourished and did not appear ill. There were some small erythematous papules on the right leg and the right side of the back, without associated petechiae or tenderness. The sinuses transilluminated well. The teeth were in good condition. The tonsils had been removed. The thyroid was palpable. The chest was symmetrical and the expansion good and equal. The percussion note was resonant throughout. The breath sounds were normal. The liver and kidneys were not palpable. The spleen was palpable at the costal margin. Pelvic examination gave negative results. The extremities showed no abnormalities.

Course and Accessory Examinations.—The hemoglobin content was 94 per cent; the red blood cells numbered 4,300,000 and the white blood cells 4,850, with 38 per cent polymorphonuclear leukocytes, 6 per cent monocytes and 2 per cent eosinophils. Urinalysis gave negative results. No tubercle bacilli were found in the sputum. The blood serum agglutinated abortus antigen in a 1:10 dilution. The opsonocytophagic reaction was strong. The intradermal test with brucellergin (1:50,000) gave an area of erythema and induration 3 by 5 cm. X-ray examination of the chest showed scattered bronchopneumonic areas and infiltration throughout the parenchyma of both lungs. X-ray examinations of the chest were repeated on three occasions during the following four months. They showed an increase in the density of the described areas. The x-ray appearances were reported by Lafferty and Phillips.[31]

The patient remained in bed for two months, during which time she continued to have a fever, with weakness and nervousness. She was treated with Brucella-immune goat's serum in three doses of 20 cc. each on consecutive days; this was followed by rather severe serum sickness, which persisted for eight days. She then began to improve. All her symptoms disappeared for one month, at the end of which afternoon fever and increasing exhaustion returned. After this relapse she was given liver extract for three weeks, with an improvement in appetite. At this time, in October, serologic tests were again made. The opsonocytophagic reaction was strong; the agglutination reactions were positive in the 1:20 dilution. After this the patient again began to improve. Blood cultures in November and December were negative. However, from guinea pigs inoculated Dec. 7, 1936, cultures of Brucella abortus were obtained.

Epidemiologic Data.—The patient had had no animal contacts. She had consumed unpasteurized milk from a herd said to have been subject to recurring abortions. The owner of this herd did not permit agglutination tests to be done on his cows.

CASE 4.—*History and Examination.*—V. S., a white girl aged 11 years, referred by Dr. Van Mathews, when first seen, in August 1936, complained chiefly of weakness, anorexia, nausea, loss of weight and low grade fever of eight months' duration. The family and past history were irrelevant.

In January 1936 the patient had an attack of "flu," which was characterized by general aching, malaise, a temperature as high as 101 F., anorexia and a cough accompanied by pain in the lower anterior part of the chest. This illness lasted for seven days. The other members of the family experienced a similar illness at the same time, but in their cases there was no recurrence. Three days later the patient had a recurrence of symptoms, which persisted for one week, after which she returned to school again but continued to feel tired, weak and nervous to such a degree that she was often obliged to go home. The symptoms were variable from day to day; for a few days she would feel all right, and then she would have another episode of weakness, anorexia, nervousness and irritability. Her temperature was carefully observed and found to be around 97 F. in the morning, rising to 99.4 F. almost every afternoon. She complained from time to time of dull frontal headache and pain in one knee and one shoulder, although there was no swelling, redness or limitation of motion. She lost almost 20 pounds (9 Kg.). X-ray examination of the chest revealed no enlargement of the mediastinal glands but showed scattered small area of bronchopneumonic infiltration throughout the hilus and parenchyma of the lung, which did not suggest tuberculosis. In May 1936 the patient was placed on a regimen of absolute rest in bed. During the period of rest she showed marked improvement, regaining most of the lost weight and feeling well generally except that she continued to have a low grade fever.

Physical examination revealed a temperature of 99.6 F., a pulse rate of 76, a respiratory rate of 20 and a blood pressure of 88 systolic, 64 diastolic. The patient was well developed and well nourished and did not appear ill. She was alert, oriented and cooperative but sometimes seemed depressed and anxious. There was no localized or generalized lymphadenopathy. The sinuses transilluminated well and equally. The teeth were in good condition. The pharynx was normal. The chest was symmetrical and the expansion good and equal; the percussion note was resonant throughout. Breath sounds and the whispered and spoken voice were normally transmitted. The liver, spleen and kidneys were not palpable. The extremities showed no abnormalities.

Course and Accessory Examinations.—In August and again in December 1936 specific tests to detect Brucella infection were performed. On both dates agglutination and opsonocytophagic reactions were negative. Tests performed with brucellergin (1:10,000) and later with a stronger dilution (1:2,000) were negative; intradermal tests with 0.1 and 1 mg. of tuberculin were negative.

In September the hemoglobin content was 11.5 Gm.; the red blood cells numbered 4,210,000 and the white blood cells 5,500, with polymorphonuclear leukocytes 44 per cent, small lymphocytes 44 per cent, large lymphocytes and monocytes 10 per cent and eosinophils 2 per cent. Repeated urinalyses gave negative results. X-ray examination of the chest in September revealed an increase in the density of the previously described bronchopneumonic areas but no increase in their number.

When the patient remained in bed the only symptoms were depression, anxiety and fever. There was a continuous increase in weight. Physical examinations made at monthly intervals showed only a mild hypotension. Finally, in the latter part

of October, the patient was allowed a regimen of gradually increasing activity. After she had been up for a few days, weakness, dizziness, fatigue, anorexia, nervousness and pallor returned. The patient returned to school in the latter part of November, although she was losing weight and the afternoon temperature rose to 99.5 or 100 F.

Blood cultures were planted in November and again in December. No growth was obtained in broth culture, but a culture of Brucella melitensis was obtained from a guinea pig inoculated with blood December 8.

Epidemiologic Data.—The patient had had no animal contacts. The herd which supplied her with raw milk was said to have had a history of recurrent abortions for several years. Agglutination tests performed on ninety-six cows gave positive reactions for twenty-seven.

CASE 5.—*History and Examination.*—H. D., a white woman aged 34, a housewife, referred by Dr. W. G. Bradford, when first seen, in November 1936, complained of loss of energy of six months' duration. The family and the past history were irrelevant.

The present illness was insidious in its onset, beginning in May 1936, when the patient first noticed loss of energy, accompanied by an elevation of temperature sometimes as high as 101 F., general muscular aching, nervousness and irritability. The headache was dull and usually frontal but occasionally in the occipital region. Anorexia resulted in a loss of 10 pounds (4.5 Kg.) in two months. In August the patient went to the mountains, where her health improved. In November there was a recurrence of the previous symptoms together with dizziness. This attack was so severe that the patient preferred to remain in bed.

Physical examination revealed a temperature of 99.8 F., a pulse rate of 84 and a respiratory rate of 20. The general physical examination gave negative results except to disclose a two and one-half months pregnancy.

Course and Accessory Examinations.—The hemoglobin content was 84 per cent; the red blood cells numbered 4,320,000 and the white blood cells 11,500, with polymorphonuclears 76 per cent and lymphocytes 22 per cent. Urinary examination gave negative results. The opsonocytophagic reaction was strong. The two Brucella antigens were agglutinated in dilutions of 1:20. Intradermal tests with brucellergin in 1:10,000 and 1:2,000 dilutions were negative. From a sample of blood taken in December Brucella melitensis was obtained in broth culture. This organism was also obtained from a guinea pig given an injection of the blood.

Recent information was received from the attending physician, who stated that the pregnancy terminated in a normal spontaneous delivery at full term. Since the birth of the child the patient has been well except for one episode of unexplained fever.

Epidemiologic Data.—The patient had had no animal contacts. She received raw milk from the same herd as patient 4.

COMMENT

From the literature and from the cases reported in this paper, a general description of chronic brucellosis may be given as follows: In severity it varies from a very mild form to a prolonged progressive disease which may end fatally, is it did in case 1. Chronic brucellosis may appear as a sequel to an acute attack or the onset may be insidious. The patient may be aware of no illness other than the mild symptoms of weakness, nervousness, exhaustion on slight effort, suffocating sensations, palpitation, insomnia, depression, irritability or a sense of impending disaster. Fever is usually present in low degree; it may be absent for weeks or months, when the patient may suffer from any or all of the mentioned symptoms. A common feature of chronic brucellosis is the lack of abnormalities to be found on physical examination except for occasional splenic enlargement and hypotension. When the mild symptoms described occur in a patient with no apparent physical abnormalities, the picture resembles that classified as psychoneurosis. One of us [11] pointed out in an earlier paper that in many cases of chronic brucellosis a diagnosis of neurasthenia is made. In general, our cases all illustrate the chief feature of chronic brucellosis—weakness, low grade fever and a lack of objective signs of disease.

The occurrence of roentgenologically demonstrable lesions of the chest with chronic brucellosis has been pointed out by Bogart,[32] by Beatty [33] and by Lafferty and Phillips,[31] who studied cases 1, 3 and 4. The appearances are variable, but in general there are an increase in the hilar root shadows and progressive peribronchial infiltration, particularly through the bases. They are similar to pictures seen with other chronic infections of the upper respiratory tract but differ in certain details. We do not maintain that they are pathognomonic of brucellosis but suggest that patients in chronic ill health should be examined for lesions of the chest. Patient 3 was referred to Lafferty and Phillips [31] with tuberculosis suspected. They found the x-ray picture so similar to that of patient 1, which they had previously studied, that patient 3 was referred to us as possibly having brucellosis. Later, roentgenograms of the chest in case 4 were found to present a similar picture.

In none of the five cases was the agglutinin titer as high as 1:80, which is usually regarded as the minimum of diagnostic significance. (In case 1 the agglutination reaction was negative until after the course of vaccine treatments had begun.) In cases 2 and 3 there was a titer of 1:40, which has some diagnostic significance, as shown in our earlier paper. In case 4 no agglutinins could be demonstrated in the blood in repeated examinations. In case 5 agglutinins could be demonstrated only in low dilution. All five patients had been ill for more than six months when the agglutination tests were performed.

Only patient 3 gave a definitely positive intradermal reaction. Patient 4 gave repeatedly negative opsonocytophagic reactions; for the four other patients the opsonocytophagic reactions varied from weak to strong, differing for a given patient in tests repeated at intervals of a month or more. One of our patients died after having shown a very strong opsonocytophagic reaction. Thus the five patients proved by culture to be infected with Brucella demonstrate the unreliability of the specific tests to detect chronic brucellosis, and they demonstrate that erroneous conclusions may be drawn if a strong opsonocytophagic reaction is interpreted as a sign of immunity.

Among the twenty-two patients in Charlotte for whom a diagnosis of chronic brucellosis was made, seven were children. The agglutination reaction was negative for all of these, thus agreeing with the observation of Huddleson and his collaborators.[12] In two cases a positive intradermal reaction was the only indication of Brucella infection; in one case both the intradermal and the opsonocytophagic reactions were positive; in four cases (including case 4), none of the specific reactions were positive. In case 4 Brucella melitensis was cultivated from the blood. These results suggest that children may be more susceptible to Brucella infection than is generally suspected and that the disease may fail to be recognized in children because

32. Bogart, F. B.: Pulmonary Changes in Undulant Fever, South. M. J. **29:** 1-9, 1936.

33. Beatty, Oren A.: Manifestations of Undulant Fever in the Respiratory Tract, Am. Rev. Tuberc. **36:** 283-289, 1937.

it occurs in a mild obscure form without the development of agglutinins.

The advantage of clinical considerations, as compared with laboratory tests for the detection of chronic brucellosis, may be illustrated by comparing the results of this study with those of Gould and Huddleson,[34] who used intradermal hypersensitivity to brucellergin and opsonocytophagic reactions as bases for finding Brucella-infected subjects. From among 845 subjects considered to be infected with Brucella on the basis of specific tests, they succeeded in cultivating the organism in blood obtained from four. Among thirteen of our patients carefully selected as probably having brucellosis on an exclusively clinical basis, Poston [29] obtained Brucella from five. Failure to obtain the organism does not preclude the possibility of brucellosis.

In the cases presented in this paper there were no known direct contacts with infected animals. Apparently indirect contact by means of the consumption of raw infected milk or other dairy products was the only exposure to infection.

SUMMARY

Twenty-two cases in which chronic brucellosis appeared to be the logical diagnosis were found during a six months survey of Charlotte, N. C., a city of about 107,000 inhabitants.

There was no history of direct contact with infected animals in any of five cases in which the causal organism was obtained. Apparently infection was contracted through the ingestion of infected dairy products.

WESTERN EQUINE ENCEPHALOMYELITIS IN A LABORATORY WORKER

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For a number of years, work was carried on with the viruses of equine encephalomyelitis on the assumption that these diseases were not communicable to man. Last summer, however, at least forty human cases of encephalitis appeared in New England during an epidemic of equine encephalomyelitis; virus was recovered from several of the patients and was shown to be that of Eastern encephalomyelitis by Fothergill, Dingle, Farber and Connerly [1] and by Webster and Wright.[2] Howitt [3] also has reported from California a fatal human case of Western encephalomyelitis and has shown that the blood of several individuals there with a previous history of encephalitis had neutralizing antibodies against Western virus. Reports have reached us of several cases of encephalitis among farmers during last year's equine epidemic; it is not improbable that some of these were due to the Western virus.

We report here the circumstances surrounding the death of a laboratory worker who was infected with the Western virus with which she had been working. R. R., a woman aged about 30, took employment at the Lederle Laboratories Feb. 24, 1939. Ten days later she complained of a headache which continued through the next day, March 6. By the 8th she was confined to her home with what was at first thought to be influenza. She had a continuing fever, which reached 104 F. by the 11th and was followed by convulsions, coma and death on the night of the 12th. Blood and spinal fluid were taken on the 11th. When injected intracerebrally the spinal fluid produced a paralysis and death in young mice and guinea pigs; blood did not produce disease. Portions of the fore and hind brain, taken at autopsy, were studied independently by three groups of observers.

Each isolated virus and by typing has found it to be that of Western equine encephalomyelitis. In one set of experiments it was established that standard Western immune horse serum neutralized the patient's virus (after one mouse passage), whereas no comparable neutralization was brought about by either normal or Eastern immune horse serum or by normal human serum. In these tests the virus and serum were incubated together for one and one-half hours and the mixture injected intracerebrally into 3 weeks old mice. In the experiments of the second group it was shown that the patient's virus produced a fatal encephalitis when injected intracerebrally into rabbits, guinea pigs and mice; it was also observed that mice hyperimmune to herpes, B, rabies, St. Louis and Eastern equine encephalomyelitis viruses were as susceptible as normal mice to the patient's virus. In this second set of experiments the virus was identified as Western by specific neutralization tests following Olitzky's [4] technic wherein virus-serum mixtures are injected intraperitoneally into 12 to 16 day old mice. It was found that immune Western serum protected mice in all dilutions with a titer of at least 10^7 whereas no neutralization was brought about by either normal or Eastern immune serum. The third identification was obtained by inoculating Western immunized, Eastern immunized and normal guinea pigs with the human virus (after one guinea pig passage); all the controls and all the Eastern immune pigs died promptly, while all the Western immune animals remained healthy.

Heart blood was also taken at autopsy. It is interesting that this blood was nearly as rich in antibodies as was a commercial Western immune horse serum.

The mode of infection could not be established. In spite of a system which called for reporting the slightest accident, the patient did not record one; and she did not tell her immediate relatives of any. There were rumors that she injected virus into a finger, presumably by breaking off the soft, curved gold point of the needle being used. Nevertheless a satisfactory confirmation of this has not been possible, and no broken needle was turned in.

This patient is the only one of more than a hundred persons working with encephalomyelitis viruses at the Lederle Laboratories who has shown any clinical symptoms of infection. Several of these people have been for years in intimate contact with the viruses, while a considerable number have worked with them for fifteen months. The personal history of the patient suggests the possibility of an unusual susceptibility. Her mother died about fifteen years ago of an obscure and

34. Gould, S. E., and Huddleson, I. F.: Diagnostic Methods in Undulant Fever (Brucellosis): With Results of a Survey of 8,124 Persons, J. A. M. A. **109**: 1971-1974 (Dec. 11) 1937.

From the Department of Bacteriology and Immunology, Harvard Medical School (Fothergill), the Department of Bacteriology, Columbia University College of Physicians and Surgeons (Holden, work done at Columbia University supported by the Matheson Commission), and the Lederle Laboratories, Inc. (Wyckoff).

1. Fothergill, L. D.; Dingle, J. H.; Farber, Sidney, and Connerly, M. L.: New England J. Med. **219**: 411 (Sept. 22) 1938.

2. Webster, L. T., and Wright, F. H.: Science **88**: 305 (Sept. 30) 1938.

3. Howitt, B. F.: Science **88**: 455 (Nov. 11) 1938.

4. Olitzky, P. K., and C. G., Harford, C. G.: J. Exper. Med. **68**: 173 (Aug.) 1938.

apparently unclassified encephalitis. She herself had had a severe tuberculous involvement of the spine. At autopsy, besides the expected picture of encephalitis, Dr. W. R. Strutton found congestion of the lungs, liver and spleen and a pyelonephritis and large cystic cavity of the right kidney. Sections of the brain, cortex and basal nuclei showed areas of marked perivascular infiltration; the right kidney was tuberculous.

Clinical Notes, Suggestions and New Instruments

LATE MARGINAL ULCER

JEROME SELINGER, M.D., NEW YORK

A man was operated on for a perforated marginal ulcer April 11, 1938, almost exactly twenty-nine years after a gastro-enterostomy had been done for a duodenal ulcer. As far as I have been able to ascertain, this is the longest interval between operation for a duodenal ulcer and the occurrence of a marginal ulcer.

The patient's record was secured from St. Vincent's Hospital in New York, where he was operated on April 29 and discharged May 23, 1909. At that time, under gas and ether anesthesia through a 3 inch incision, a typical posterior gastro-enterostomy was done. The history previous to that operation had extended over a period of two and one half years, the symptoms being marked by pain and vomiting and the vomitus being generally brownish and occasionally streaked with blood. He had put himself on a diet which gave him some relief but not complete relief. He had lost about 30 pounds (13.6 Kg.).

The patient had been in very good condition most of the time since his original operation. The situation was complicated by the fact that he had a bilateral inguinal hernia; that on the right side, being of a scrotal nature, descended frequently, perhaps becoming partially incarcerated. On these occasions he complained of considerable pain throughout the abdomen, and it is perfectly possible that he confused the pain of the recurring ulcer with that of a troublesome scrotal hernia.

On the morning of April 11, 1938, the patient complained of acute pain in the right inguinal region which became progressively worse. He did not secure the usual relief by removing his truss. The hernia was in the scrotum and he was not able to reduce it. There was no nausea or vomiting. I reduced the hernia about 2 p. m. and he reported instant relief. The abdomen did not appear tender, although a complete examination was not made at this time. He felt quite comfortable for a while. The pain later increased and seemed to be higher up in the abdomen. He was seen by an associate of mine, who made the diagnosis of an acute abdominal condition and advised his entering the hospital. When I saw him at 8:30 p. m. at the New York Post-Graduate Hospital he had all the signs and symptoms of an acute perforated viscus, and a diagnosis of perforated marginal ulcer was made. I operated on him at 9:30. Free gastric contents were found in the abdomen. The entire duodenum and part of the jejunum were greatly enlarged and edematous. The old gastro-enterostomy was completely free of adhesions to the surrounding structures. There was a perforation about the size of a green pea at the anastomotic site posteriorally and at the efferent end of the loop. The opening was sutured with three purse-string sutures of chromic catgut; two cigaret drains were inserted and the abdomen was closed in layers.

The patient had a stormy convalescence, for a variety of reasons: (1) his distinct aversion to an operation, he having stated on several occasions that he would prefer to die rather than have an operation; (2) the development of bronchopneumonia; (3) the myocardial abnormalities; (4) the development of a severe psychosis, and (5) overtreatment with drugs.

He got out of bed on several occasions but in spite of everything he made progress, and on the twelfth postoperative day all sutures were removed, at 9:30 a. m. At 2 p. m. it was noted that his dressing had a pink stain. The resident removed the dressing and found that there was complete dehiscence of the wound. He packed it with iodoform gauze, restrapped it with adhesive plaster and notified my office. I was out of town but an associate who was in the hospital resutured the wound at 5 p. m. Under procaine hydrochloride anesthesia, three through and through silk sutures were introduced and the fascia and peritoneum were sutured with 00 catgut.

The patient's behavior continued about as before. There was no improvement in the psychosis. He was out of bed two or three times within twenty-four hours after the wound had been resutured. He was under the medical care of an associate, who was able to keep him relatively quiet with paraldehyde. Physically he seemed to be better; on the twenty-sixth day we decided to send him home in an ambulance on the theory that being at home and away from the hospital, which he disliked, might hasten his recovery. He was accordingly sent home with a temperature of 100 F. and a pulse that ranged between 90 and 100. A letter was written to his local physician telling him all the facts and urging him to leave the sutures in place at least fourteen days.

He apparently did very well at home. His mental condition cleared; he was gradually allowed out of bed, and on June 29, two and one half months after the original operation, he came into my office, rather shaky but able to get about. On examining his wound I found that the skin had grown under and had refused to unite; he was readmitted to the hospital July 5 for a revision of the wound. The abdomen was reopened, the peritoneum secured, the fascia separated from the skin and firmly sutured with chromic catgut and the skin sutured with silk. On this occasion we kept him in the hospital seventeen days. There was a slight discharge from the wound but it closed promptly and apparently at the present time he is in good condition.

He was seen and presented to the surgical staff meeting at the New York Post-Graduate Hospital Jan. 3, 1939, at which time he was in excellent condition. He had gained 15 pounds (6.8 Kg.), his abdomen was strong and there was no evidence of herniation. He is on a moderately restricted diet.

121 East Sixtieth Street.

CEREBELLAR TUMOR WITH ACUTE RESPIRATORY PARALYSIS

REMOVAL OF TUMOR AND RECOVERY

D. H. WERDEN, M.D., SAN DIEGO, CALIF.

Acute respiratory failure followed by removal of a brain tumor, survival and recovery is sufficiently unusual to justify reporting. The case emphasizes the fact that relief of increased intracranial pressure associated with brain tumor may become an acute emergency measure, illustrates the value of ventricular puncture and drainage, and shows that respiratory failure, though usually fatal, does not necessarily indicate an altogether hopeless prognosis.

REPORT OF CASE

History.—Jean D., a girl aged 14 years, was seen in neurosurgical consultation for Dr. Ernest Thelen April 16, 1937, approximately five minutes after the patient had ceased breathing. The only information available at that time was that the patient had been ill for about three months with loss of weight, headache and failing vision. She had been under treatment for intestinal influenza and the day before (April 15) had been admitted to San Diego County Hospital under the provisional diagnosis of tuberculous meningitis.

Examination.—A hasty superficial examination revealed that the patient was dehydrated, extremely emaciated and in deep coma with dilated fixed pupils. The pulse rate was 60 and the patient was breathing only by artificial respiration given by Dr. Clark, an intern. All the extremities were flaccid. The disks were blurred and elevated about 2 diopters, with some pallor, suggesting secondary optic atrophy. The spinal fluid examined the day before had contained no cells and no fibrin pellicle. The blood count was red cells 4,570,000, white cells 16,150, hemoglobin 91 per cent and polymorphonuclear leukocytes 92 per cent. No other diagnostic studies had been done.

On the basis of a history of pressure symptoms without localizing symptoms, the negative spinal fluid cell count and the sudden respiratory failure, a presumptive diagnosis of cerebellar tumor was made.

Operation.—Ventricular Drainage: The patient was immediately sent to the operating room, where artificial respiration was continued by forced inhalation of a mixture of carbon dioxide and oxygen alternated with manual compression of the lungs. Without an anesthetic, preparation of the head or sterilization of the instruments, a left posterior parietal trephine was made and the ventricle tapped and slowly drained of about 60 cc. of ventricular fluid over a period of forty minutes. At the end of this time spontaneous breathing ensued but was supplemented by carbon dioxide and oxygen.

At noon, three hours after operation, the patient was still breathing but the pulse rate had increased to 168. A transfusion of 450 cc. of citrated blood was given. By 3 o'clock the pulse rate was 120; respiration was more quiet and deep. The patient was still in deep coma. On the assumption that her condition was about as good as it ever would be, suboccipital exploration was decided on.

Suboccipital Exploration: With procaine hydrochloride locally, a curved linear incision was made 2 cm. above the supranuchal line from one mastoid process to the other. After the galea had been incised the scalp was reflected downward for about 2 cm. The deep cervical fascia was then severed about 1 cm. from its attachment at the nuchal line and it, together with the subjacent muscles of the neck and periosteum, was elevated from the occipital bone down to the foramen magnum. A trephine was made in each side of the occipital bone and the entire occipital bone rongeured away up to the lateral sinus and down to and including the posterior half of the foramen magnum.

Before the dura was opened the ventricle was again tapped, about 80 cc. of fluid being drained off. The dura was then opened and the cerebellar hemispheres were palpated. A midline incision was made in the vermis to a depth of about 1 cm. At this point a reddish mass was encountered which proved to be a blood clot. This was removed, revealing a round encapsulated tumor. The surrounding cerebellar tissue was retracted gently with cotton pledgets and retractors. With a small periosteal elevator the tumor was lifted from its bed and removed in toto. The cavity was irrigated with saline solution and lightly packed with cotton for a few minutes until the hemorrhage was controlled. After a few minutes the cotton packs were removed and the cavity was further irrigated. The dura was left open; the deep cervical muscles and fascia were sutured to the fascial attachment at the supranuchal line with interrupted silk sutures and the skin likewise. No drains were used.

Conditions Found at Operation: The dura covering the cerebellar hemispheres was under tremendously increased tension; the ventricular fluid was under increased tension despite the fact that drainage had been done approximately six hours before. After drainage of about 80 cc. the tension on the cerebellar hemispheres was reduced to approximately normal. When the dura was reflected neither hemisphere seemed to be abnormally enlarged and no mass could be felt by palpation. The vermis, however, did appear slightly more bulging and more widened than normal, and both cerebellar hemispheres and the lower tip of the vermis were herniated into the foramen magnum. No cisternal fluid was present. When a ventricle needle was passed into the left cerebellar hemisphere a resistance was felt which gave the impression that the ventricle needle was passing over the edge of a firm mass. After the needle was withdrawn, considerable blood oozed from the puncture wound.

The vermis was incised and a reddish mass was encountered which at first was thought to be a tumor but later proved to be a blood clot, measuring in thickness about 0.5 cm. and found to be surrounding the posterior half of a tumor. The tumor was also partially surrounded by yellow cystic fluid to at least two thirds or three fourths of its circumference. This fluid, together with the hemorrhage, had separated the tumor from the cerebellar tissue in almost its entire circumference.

The tumor itself was about the size and shape of a small walnut but was smooth and entirely encapsulated and could be shelled out with very little difficulty. A moderate amount of bleeding followed but was easily controlled. Owing to the rather deep position of the tumor bed, the base of the cavity was not palpated. The entirely encapsulated appearance of the tumor gave one the impression that there were no other adjacent nodular masses. Following removal of the tumor, the tension was apparently not increased.

The pathologic report by Dr. H. A. Ball was as follows: The specimen consisted of the brain tumor, which was 3.5 by 1.5 cm., a small amount of brain tissue and three or four blood clots. The microscopic appearance was that of an astroblastoma.

At 7:20 p. m. 500 cc. of citrated blood was given by venesection. The operation was finished at 7:55 and the patient was returned to bed with a pulse rate of 104 and was breathing spontaneously at about 32 respirations a minute.

Postoperative Course.—This was extremely stormy. The patient remained in coma for thirty-two days. On the first postoperative day the temperature rose to 105.6 F. rectally; on the fifth day there was cyanosis and the pulse rate was 160 a minute; on the fifteenth day the patient became noisy and moved the upper extremities for the first time. She continued to be involuntary, irrational, cried excessively and had difficulty in chewing but would occasionally respond to commands. On the thirty-second day the patient was conscious for the first time and began turning herself in bed without help. She could not speak but would shake or nod her head to indicate "no" or "yes." Involuntary crying and frequent vomiting of breakfast continued. Urticaria developed on the forty-sixth day with a pulse of 144 but was relieved by small doses of epinephrine. On the fifty-first day the patient called "mama," the first word she had said since the day of operation. Five days later she asked for watermelon and milk. Speech was characteristically bulbar. The patient was sent home by ambulance on the fifty-seventh day.

Other conditions of interest during this time were the following: The temperature was up to 103 F. until the ninth day and 102 F. until the sixteenth day. Ventricular drainage was done repeatedly without moving the patient from her room; the exact number of times was lost count of. Contractures of the hamstring muscles could not be prevented. Body weight and texture and color of the skin were actually improved, even during the thirty-two days of coma, by nasal tube feeding.

On discharge the wound was healed but the decompression area was under some pressure. There was marked incoordination of ocular movements and total blindness with optic atrophy, which was undistinguishable from a primary type of optic atrophy. All deep reflexes were absent; abdominal reflexes were absent and the Babinski signs were not present. Cerebration was slow, but the patient's replies were accurate and intelligent.

For several months at home the patient remained in bed. The drawling speech slowly improved. She was bright, jovial, intelligent and emotionally stable. After four months she was returned to the hospital. There had been some morning vomiting. Treatment with 2,000 roentgens was given through two fields by Dr. John Kellogg.

At present the patient is normal mentally. Speech is normal. Blindness, pupillary fixation to light and optic atrophy are complete. Contractures are partially overcome and walking is possible with support. The patient is otherwise subjectively and objectively well.

SUMMARY

The preoperative diagnosis in this case of cerebellar tumor was made in haste and on scanty but sufficient evidence. Respiratory paralysis lasted approximately forty minutes and was relieved by expedient ventricular drainage and artificial respiration. Successful complete removal of a cerebellar astroblastoma resulted in cure to date (one and one-half years). At present optic atrophy, blindness and some disability in walking are the only residual conditions.

COMMENT

Acute respiratory failure is a frequent cause of death in patients with unoperated cerebellar tumors. Even the early signs of impending medullary failure carry an extremely poor prognosis unless immediate relief of intracranial pressure is obtained. In the case herein reported, the patient has survived

not only prolonged complete respiratory paralysis but also removal of the tumor.

Cerebral anoxia during apnea undoubtedly contributed to the prolonged unconsciousness and stormy postoperative course but did not result in subsequent mental impairment. The same process, however, was sufficient to result in blindness when superimposed on an already existing papilledema and secondary optic atrophy.

CONCLUSIONS

1. The advantage of early diagnosis is obvious.

2. Delayed diagnosis permits just such an emergency as that cited to occur, in which event immediate ventricular drainage is imperative.

3. The axiom "where there is life there is hope" is applicable in certain cases of brain tumor even after breathing has ceased and "life" is limited to cardiac function.

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Special Clinical Article

STRICTURES AND INJURIES OF BILE DUCTS

A STUDY OF RESULTS OF OPERATIONS IN EIGHTY CASES

CLINICAL LECTURE AT ST. LOUIS SESSION

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This study of benign strictures of the common and hepatic bile ducts is based on eighty consecutive cases in which I have performed operations at the Mayo Clinic during the past fifteen years. The follow-up study of these cases has been carried out by Dr. Everett B. Lewis,[1] my first assistant. One of my former first assistants, Dr. K. K. Nygaard (now of Oslo, Norway), and Dr. Shelden and I summarized the results of fifty-one of these cases in 1937.[2]

There were ten deaths in the series of eighty cases, a mortality of 12.5 per cent (table 1). In but twelve of the cases (15 per cent) was the stricture localized and small enough so that it could be excised and the ends of the common bile duct anastomosed together. Fifty-eight per cent of these patients have been well since their operation (table 2), three have been well for more than five years, and one for more than three years. When the lower portion of the common bile duct was strictured, there was sufficient common or hepatic duct above the stricture to allow an anastomosis of it to an opening made in the duodenum in 61 per cent of the cases (choledochoduodenostomy and hepaticoduodenostomy); 68 per cent of these patients have been well since the operation (fig. 1). In eight of these more than five years has elapsed since the operation, and in eight more than three years. There was a mortality of 6 per cent in the group of cases in which choledochoduodenostomy or hepaticoduodenostomy could be performed (table 3). The cause of death in the three cases in which this operation was performed was hepatic insufficiency. In fifteen cases the extrahepatic ducts were strictured throughout their entire length, it being necessary to establish external biliary fistulas, some of which fistulas were transplanted into the stomach or duodenum.

This summary of the types of operation and the results obtained will serve to establish the fact that, generally speaking, there are three types of operations which can be performed in the surgical treatment of stricture of the common and hepatic bile ducts, the choice of operation being determined by the extent of the stricture and the amount of uninvolved portion or portions of

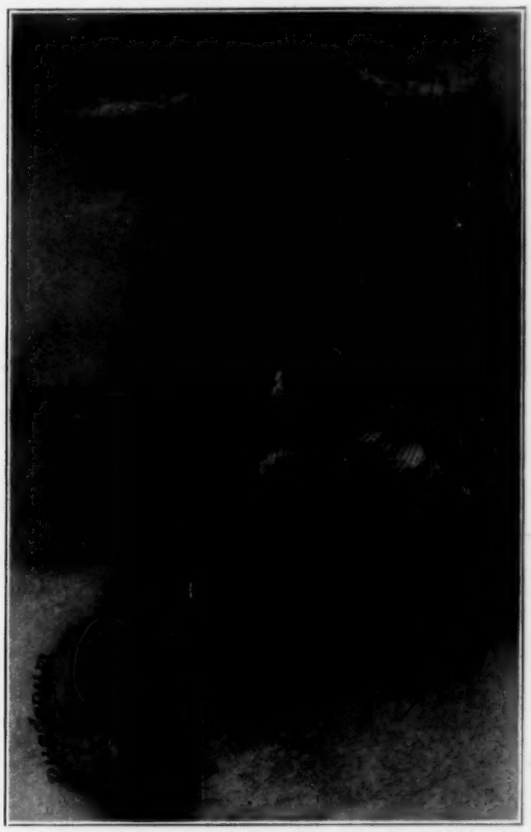

Fig. 1.—First step in performing choledochoduodenostomy. An outer row of silk sutures has been introduced approximating the common bile duct, above the site of its stricture, and the duodenum. A transverse incision has been made in the common bile duct and opposite it a longitudinal one has been made on the anterior wall of the duodenum.

the common and hepatic bile ducts. It is further illustrative of the fact that the surgical treatment of stricture of the common bile duct is far from being hopeless; for, if sufficient duct remains adjacent to or above the site of stricture to allow an anastomosis between the ends of the duct or an anastomosis of the duct above the stricture with an opening which one makes in the duodenum, thereby obtaining an accurate mucous membrane to mucous membrane anastomosis, 58 and 68 per cent of the patients, respectively, have what might be termed excellent results without evidence of recurring biliary obstruction. Furthermore, in that most serious group of cases in which the extrahepatic bile ducts are completely strictured, surprisingly good results have been obtained in a few cases by establishing an external biliary fistula and by transplanting the latter into the stomach or duodenum or by suturing a small opening made in the duodenum to the hilus of the liver around the biliary sinus in which a rubber tube has been inserted into the intrahepatic duct (fig. 2). In two

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Read in the Panel Discussion on Biliary Tract Disease, Surgical Division, General Scientific Meetings, at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 16, 1939.

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cases in which an extrahepatic bile duct was not present and drainage of the intrahepatic duct was established by catheter, spontaneous fistulas developed between the sinus created by the catheter and an opening in the duodenum, apparently the result of necrosis from the constant pressure of the catheter (fig. 3). In both cases, complete relief of biliary obstruction was obtained with free entrance of bile into the gastrointestinal tract.

In spite of these encouraging results the seriousness of stricture of the common and hepatic bile ducts should not be minimized. The discouraging part of the problem is that 10 per cent of the patients who had choledochoduodenostomy or hepaticoduodenostomy performed had recurring episodes of biliary obstruction after returning home, and 16 per cent died at home over varying periods because of hepatic insufficiency and hemorrhage (table 1). Even in the group of cases in which the stricture was small enough to excise, making an end to end anastomosis of the duct or a plastic enlargement of the point of narrowing, 8.3 per cent of the patients had recurring episodes of biliary obstruction after returning home and 25 per cent died later at home from hepatic insufficiency (table 2).

Furthermore, even though the hospital mortality rate in the series of eighty cases was but 12.5 per cent, it must not be forgotten that an additional 19 per cent of the patients in the series died at home, the cause of death being hepatic insufficiency with and without hemorrhage, complicated by pneumonia in two cases.

In giving the gloomy side of the picture, I am merely emphasizing the seriousness of the surgical condition in the hope that, as a result, its incidence will occur less frequently; for, in seventy-seven of the eighty cases, the stricture occurred after operations on the gallbladder or bile ducts. The three cases in which operative procedures on the bile ducts could not have been an etiologic factor, respectively, consisted of a neurofibroma at the junction of the hepatic and common ducts, a calcified pancreatic cyst that compressed the common bile duct, and an inflammatory stricture. That some of the cases probably were not due to injury of the ducts is evidenced by the fact that, according to the history, a cholecystostomy was performed in five cases, or 6 per cent. I would call attention also to the fact that, in this study of stricture of the common duct, cases of malignant stricture have been excluded. In other words, causes other than operative injury of the bile ducts may produce a postoperative stricture of the common or hepatic bile ducts. I recall one case in particular in which, at the time of the patient's appearance at the clinic, an external biliary fistula was present. At operation on March 30, 1936, I found and removed a round calculus about 1.5 to 1.75 cm. in diameter from the ampulla, where it was firmly fixed and probably had been present for sufficient time to produce pressure necrosis of the mucous membrane of the ampullary portion of the common bile duct, for, subsequent to the removal of the stone and healing of the fistula, evidence of recurring obstruction occurred for which a choledochoduodenostomy was performed on Nov. 30, 1936. Multiple small stones, 8 mm. in diameter, were also removed from the common and hepatic ducts at this time.

Although this patient made a good recovery and was well for several months, attacks of pain without jaundice recurred. I operated on her a second time on Jan. 26, 1939, finding the common and hepatic bile ducts filled with small stones from 2 to 10 mm. in diameter with considerable narrowing of the stoma previously made in the course of performing choledochoduodenostomy. The stones were removed and an anastomosis was again made and has been followed by a good result. The case is important because it illustrates that if a stone becomes impacted in the common bile duct there may occur narrowing of the duct sufficient to produce biliary obstruction; the same thing may occur after a satisfactorily performed choledochoduodenostomy. In addition, when choledochoduodenostomy or hepaticoduodenostomy has been performed and symptoms of recurring obstruction take place, the patient should be given the benefit of exploration of the biliary tract, because in some of these cases stones may be found

TABLE 1.—*Results of Eighty Operations Performed for Stricture of the Common Bile Duct*

Operation	Total	Patients Well When Last Heard From	Recurrent Attacks of Pain and Jaundice, Patients	Died After Leaving Clinic: Patients	Died After Leaving Clinic: Cause of Death	Died in Hospital After Operation: Patients	Died in Hospital After Operation: Cause of Death
Choledochoduodenostomy	27	21	3	2	1, bronchopneumonia 1, hemorrhage	1	Pneumonia, cardiac, hepatic insufficiency
Hepaticoduodenostomy	22	12	2	6	3, hepatic insufficiency 2, hemorrhage 1, pneumonia	2	Hepatic insufficiency
Cholecystoduodenostomy	1	..	..	1	1, hemorrhage		
Cholecystogastrostomy	1	1	..	..			
Hepaticogastrostomy	2	..	..	..	.....	2	Hemorrhage
Plastic reconstruction of bile ducts	12	7	1	3	2, hepatic insufficiency 1, unknown	1	Hemorrhage
Establishment and transplantation of external biliary fistulas	7	2	2	2	1, hepatic insufficiency 1, unknown	1	Hemorrhage
Establishment of external biliary fistulas	8	2 (both spontaneous biliary fistula to duodenum)	2	1	1, hemorrhage	3	Hepatic insufficien
Total	80	45 (56%)	10 (12.5%)	15 (19%)	.....	10 (12.5%)	

TABLE 2.—*Plastic Reconstruction of Bile Ducts in Twelve of Eighty Cases of Stricture of the Common Bile Duct*

Cases	Patients Well When Last Heard From	Recurrent Attacks of Pain and Jaundice, Patients	Died After Leaving Clinic: Patients	Died After Leaving Clinic: Cause of Death	Died in Hospital After Operation: Patients	Died in Hospital After Operation: Cause of Death
12	7 (58.3%)	1 (8.3%)	3 (25%)	2, hepatic insufficiency 1, unknown	1 (8.3%)	Hemorrhage

in the ducts above the anastomosis which may be narrowed down sufficiently to be one of the causes of the development of the common duct stones. Not only can the stones be removed but also the anastomosis may be enlarged or a new or additional anastomosis may be made, if necessary.

I wish to emphasize, therefore, the value of exploration of the biliary tract in all cases in which there is evidence of biliary obstruction, no matter what the history, when viewed in the light of previous operative observations or reported operative procedures, seems to indicate as to the cause or the possibility of relief of the recurring biliary obstruction. I have in mind a woman aged 27 whose surgeon had found at operation a very severely infected, gangrenous gallbladder which was removed without difficulty, a catheter being inserted into the common duct through the cystic duct. With removal of the catheter a biliary fistula developed and at operation the surgeon was under the impression that he had anastomosed both hepatic ducts to the stomach. Because of the shortness of the hepatic ducts, what would seem to be an almost insurmountable problem in technic presented itself when the young woman began to show signs of recurring biliary obstruction. Because of her youth and her very good general condition it was decided to operate again and explore the ducts. At operation a dilated common bile duct, about 1.4 cm. in diameter and of about the same length, was found above the stricture so that an accurate anastomosis could be made between it and an opening made in the duodenum. This procedure has been followed by a good result.

A third case in which operation was performed several years ago further emphasizes the value of exploring the biliary tract when there is evidence of biliary obstruction with fistula. This patient, a Central American, presented himself at the clinic with a letter from his surgeon, who suggested that the external biliary fistula which was present be transplanted into the patient's stomach or duodenum. As there was some uncertainty as to what part of the biliary tract the fistula communicated with, it was thought best to explore the biliary tract through an incision made on the median side of the fistula, allowing the latter to remain attached to the liver so that it could be used for transplantation into the stomach or duodenum, if necessary. The fistulous tract was found to communicate with an enlarged stump of the hepatic duct of sufficient length and diameter to enable one to make an accurate anastomosis between the duct and an opening made in the duodenum. The results of such an operation, as a rule, are far superior to transplantation of a biliary fistula. Exploration of the interior of the duct with the scoop, which should always be done before any plastic procedure is attempted, brought out three stones, the largest one being about 1 cm. in diameter. Failure to recognize these stones in all probability would have resulted in recurring episodes of biliary obstruction, leading to the erroneous assumption that the passage at the site of the biliary-intestinal anastomosis had become contracted.

REDUCTION OF THE INCIDENCE OF STRICTURE

Although every surgeon of experience may injure a common bile duct, I believe that it is fair to state that the incidence of stricture of the common bile duct will decrease as the surgeon's experience in the management of lesions of the biliary tract increases. The remarkable thing to me is the relative infrequency with which the condition develops when one considers the extensive nature of infections which occur in and around the gallbladder and bile ducts as the result of acute obstructions occurring to these structures, usually as the result of delay in the surgical treatment of gallbladder disease. I have seen cases in which at first glance an enlarged common bile duct adherent to a contracted gallbladder gave evidence of being part of the gallbladder itself. In other cases of acute, subacute and chronic disease of the wall of the gallbladder I have spent considerable time and care in dissecting an adherent gallbladder from the hepatic duct. In a few cases in which the mechanical difficulties of the operation were accentuated because of the size of the patient or the disturbed anatomic relationships as a result of infection, the cystic artery has been difficult to ligate accurately and a hemostat has been left on, rather than take a chance of tearing the cystic artery so close to

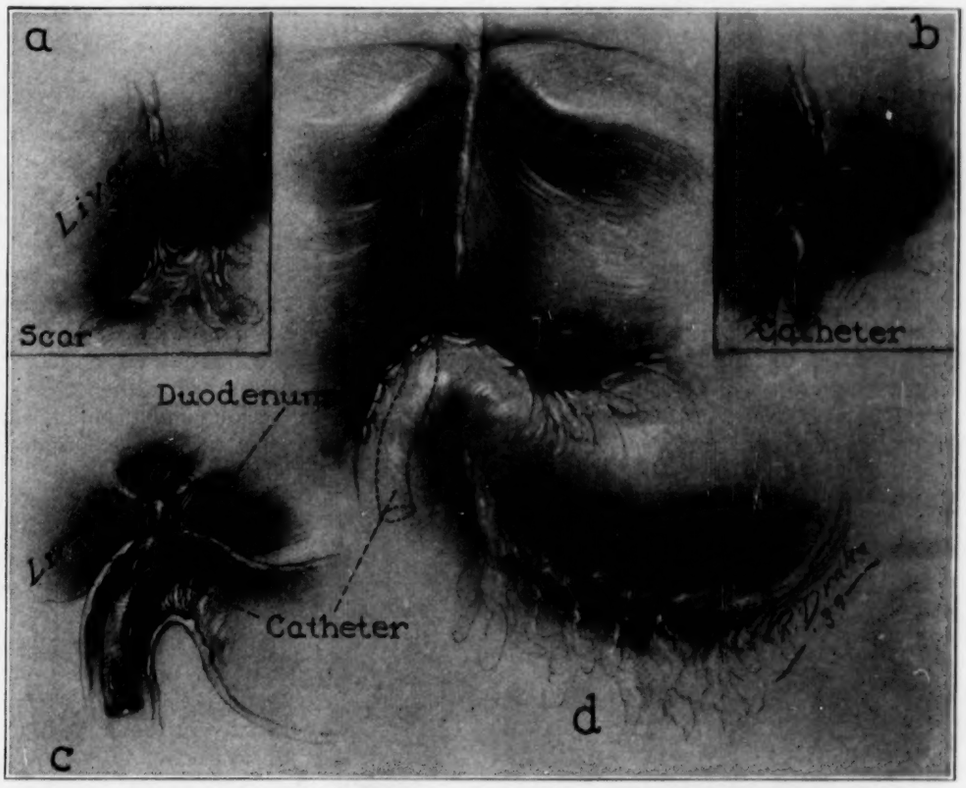

Fig. 2.—Anastomosis between the intrahepatic bile ducts and the duodenum; *a*, scar showing stricture of entire length of extrahepatic biliary tree; *b*, a portion of a catheter has been inserted into the intrahepatic duct; *c*, the edges of an incision in the anterior wall of the duodenum have been sutured to the liver around the intrahepatic portion of the catheter; *d*, completed operation showing immobilization of the duodenum around the anastomosis by sutures between the duodenum and the liver.

the hepatic artery that it would be necessary to ligate or clamp the hepatic artery or injure the common duct by hemostat or ligature.

The corollary of this seems to be that under such difficult conditions the wise surgeon of average experience is going to be satisfied in many of the most difficult cases with the performance of a cholecystostomy rather than attempt to do a cholecystectomy. Seventy-eight per cent of the strictures in this series occurred after cholecystectomy alone, and in an additional 11 per cent it occurred after cholecystectomy and choledochostomy, a total of 89 per cent in contrast to 7.5 per cent occurring after cholecystostomy. I appreciate the fact that there has been a tendency to relegate cholecystostomy to the background because of a reported incidence of recurring cholecystitis all the way from 25 to 50 per cent or more. My own experience now over a period of fifteen years would indicate that in selected cases cholecystostomy may be the operation of choice and also that it is followed, under such circumstances, by surprisingly good results with a low operative risk and an incidence of recurring inflammation or gallstones not to exceed from 15 to 20 per cent. This applies particularly to patients who have obstructive jaundice and have common duct stones and gallbladders the walls of which may have lost some of their elasticity as a result of recurring inflammation. It also applies to jaundiced patients who do not have common duct stones but have an associated pancreatitis and cholangitis or an unsuspected small tumor of the ampulla of Vater masked by the edematous head of the pancreas. In such a case the gallbladder can be used to restore biliary-intestinal continuity if the pancreatic or biliary obstruction occurs.

As an example, a man aged 67 came to the clinic on May 27, 1936. There was a large tumor in the right upper quadrant which he had first noticed in 1929. He did not have symptoms referable to the tumor other than belching and gas, which had been present for thirty years. Diagnoses of a cyst of the pancreas and cholecystitis with stones were made. A large calcified cyst in the head of the pancreas was producing sufficient pressure against the pancreatic portion of the common bile duct to cause some question as to whether or not a biliary fistula would develop after the removal of the diseased gallbladder, which contained stones. For that reason, on Nov. 9, 1936, a cholecystostomy was performed rather than a cholecystectomy, after first incising and draining the multiple pancreatic cysts on June 18. Bile continued to be discharged through the cholecystostomy sinus and it was necessary to perform a cholecystogastrostomy four and a half months later, on March 29, 1937. This has been followed by complete subsidence of symptoms and satisfactory passage of bile into the gastrointestinal tract. The patient wrote in December 1938 that he was working all the time and was feeling very well.

It has been my experience that if, after cholecystostomy, cholecystectomy becomes necessary, it can usually be done with greater ease and certainly with much greater safety to the patient because of the absence of jaundice and the lessened likelihood of bleeding. For the patient whose previous operation was done for acute or subacute inflammation of the gallbladder, there is less likelihood too of injury of the common bile duct because of the subsidence of the acute inflammatory process, unless the latter has recurred. The other point which I think is of the utmost importance is that, if one does injure the common bile duct at the time of operation, such an injury should be recognized and should be repaired or reconstruction done immediately. The technic of such a procedure then is much easier and safer than at a later time when infection of the liver or wall of the duct has resulted during the progressive occlusion of the bile duct by the stricture.

TABLE 3.—*Choledochoduodenostomy and Hepaticoduodenostomy in Forty-Nine of the Eighty Cases of Stricture of the Common Bile Ducts*

Operation	Cases	Patients Well When Last Heard From	Recurrent Attacks of Pain and Jaundice, Patients	Died After Leaving Clinic		Died in Hospital After Operation	
				Patients	Cause of Death	Patients	Cause of Death
Choledochoduodenostomy	27	21	3	2	1, bronchopneumonia 1, hemorrhage	1	Pneumonia, heart disease, hepatic insufficiency
Hepaticoduodenostomy	22	12	2	6	3, hepatic insufficiency 2, hemorrhage 1, pneumonia	2	Hepatic insufficiency
Total	49	33 (68%)	5 (10%)	8 (16%)		3 (6%)	

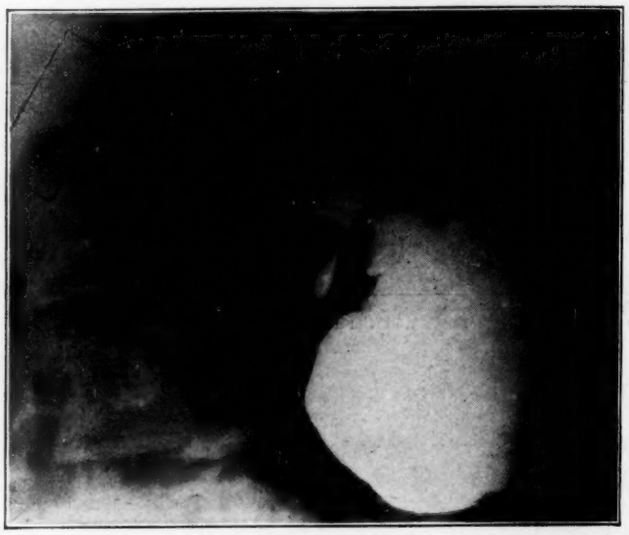

Fig. 3.—X-ray appearance of stomach and duodenum: the duodenal fistula communicates with the biliary fistula within the abdomen.

PREPARATION OF THE PATIENT AND TECHNIC

A few comments on surgical management may not be amiss. Certainly the patient with stricture of the common duct must be adequately prepared for operation in order to improve the function of the liver and to prevent bleeding. In this connection the importance of administration of dextrose and the use of vitamin K

and bile salts [3] cannot be overemphasized. An elevated prothrombin time as an indication for such therapy before and after operation in our experience has furnished an accurate indication of the tendency to bleed.

At operation, if one uses sharp dissection close to the liver usually no difficulty is encountered in finding the hepaticoduodenal ligament. An aspirating needle or syringe will help one find the stump of the common or hepatic duct and will help to prevent mistaking the portal vein for the common bile duct.

One point in particular should be repeatedly emphasized and that is never to give up hope of finding enough duct above the stricture to allow a direct anastomosis of it to the duodenum. Time and again I have thought the entire extrahepatic biliary tree to be strictured but have found on dissecting close to the liver and higher and higher into its hilus that usually there is a fringe of duct of sufficient length to permit its anastomosis with the duodenum. If such is not the case, the hilus of the liver should be needled with an aspirating needle and syringe until the dilated intrahepatic duct has been tapped. Then, leaving the needle in and using it as a guide, one can make an opening into the intrahepatic duct and insert a catheter, allowing it to remain until the jaundice has subsided and hepatic function has improved to permit a reconstructive biliary-intestinal anastomosis. Or a piece of catheter can be inserted with one end in the hepatic duct and the other passing through an opening made in the duodenum, and the edges of the opening are sutured to the liver adjacent to the catheter (fig. 2).

SUMMARY

A study of eighty consecutive cases of stricture of the common bile duct in which surgical procedures have been performed at the Mayo Clinic by the author forms the basis of an evaluation of the types of operation performed.

In forty-nine, or 61 per cent, of the cases, choledochoduodenostomy or hepaticoduodenostomy was performed with a hospital mortality of 6 per cent. Thirty-three, or 68 per cent, of these patients have been well without evidence of recurring obstruction, eight for more than five years and eight for more than three years.

In twelve of the cases, or 15 per cent, plastic operations have been performed on the duct, consisting of excision of the stricture with anastomosis of the ends of the duct and, in a few cases, plastic enlargement of the narrowed or strictured portion of the duct, usually with partial excision of the strictured portion. Seven, or 58 per cent, of these patients have been free from evidence of biliary obstruction, three for more than five years and one for more than three years.

Other types of surgical procedures such as cholecystoduodenostomy and cholecystogastrostomy also have been used when the gallbladder remained.

When the entire length of the extrahepatic biliary tract was strictured external biliary fistulas have been established in fifteen cases, and in seven of these the fistulas have been transplanted into the stomach or duodenum. In two such cases, in which external biliary fistulas were established, an internal fistula between the biliary fistula and the duodenum developed, apparently because of necrosis caused by pressure of the catheter on the wall of the duodenum. Both of these patients are living and are relieved of their biliary obstruction.

The hospital mortality in the series of eighty consecutive cases was 12.5 per cent.

In seventy-seven of the eighty cases, stricture followed previous operations on the biliary tract. In 89 per cent of cases the previous operative procedure was cholecystectomy, in 11 per cent of which simultaneous operations were performed on the common bile duct, whereas in 7.5 per cent the previous operation was a cholecystostomy.

In spite of the encouraging results in the surgical treatment of stricture of the common bile duct, the seriousness of the condition should not be minimized; for, in from 8 to 10 per cent of the cases in which accurate anastomosis could be made between the ends of the duct after excision of the stricture or between the stump of the duct above the stricture and an opening made in the duodenum (choledochoduodenostomy or hepaticoduodenostomy), episodes of biliary obstruction recurred and 19 per cent of the eighty patients died over variable periods of time after returning home.

3. Butt, H. R.; Snell, A. M., and Osterberg, A. E.: The Use of Vitamin K and Bile in Treatment of the Hemorrhagic Diathesis in Cases of Jaundice, Proc. Staff Meet., Mayo Clin. **13**:74-80 (Feb. 2) 1938; Further Observations on the Use of Vitamin K in the Prevention and Control of the Hemorrhagic Diathesis in Cases of Jaundice, ibid. **13**: 753-764 (Nov. 30) 1938.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

SALYRGAN SUPPOSITORIES AND MERCURIN: A WARNING
and
ACCEPTANCE OF SALYRGAN SUPPOSITORIES RESCINDED

Salyrgan, which is sodium [o(hydroxymercuricmethoxypropylcarbamyl) phenoxy] acetate, was accepted by the Council (THE JOURNAL, Dec. 22, 1928, p. 1995) on evidence presented by the manufacturer, the Winthrop Chemical Company, of its usefulness as a mercurial diuretic. In 1937 the firm presented as a dosage form Suppositories Salyrgan of the following composition: salyrgan 0.4 Gm., corn starch 0.1 Gm., and cocoa butter 1.3 Gm. Since the rectal administration of a mercurial diuretic seemed rational, the Council accepted Salyrgan Suppositories as a dosage form of Salyrgan, and the description was published in THE JOURNAL, May 15, 1937, page 1715. For the same reason the Council accepted Mercurin Suppositories, 0.5 Gm., distributed by the Campbell Products, Inc., and its description was published in THE JOURNAL, July 10, 1937, page 133. Mercurin is a mixture of 20 per cent of the β-methoxy-γ-hydroxymercuri-propylamide of trimethyl cyclopentane dicarboxylic acid and 80 per cent of its sodium salt.

Subsequently Dr. Arthur C. DeGraff, professor of therapeutics at New York University, sent the following communication to the Editor of THE JOURNAL, who in turn referred it to the Council on Pharmacy and Chemistry:

> For the past year on the Third Medical (New York University) Division of Bellevue Hospital we have been studying the effects of mercurial diuretics when given in the form of a suppository by rectum. When we first began our work the only suppository available was mercurin. In view of the possibility of a local effect on the rectal mucosa, every patient was carefully examined proctoscopically before and after each insertion of a suppository. No untoward effects were noted with mercurin. Early in 1937 Salyrgan suppositories appeared on the market. On May 15, 1937, a notice of the acceptance of the suppository form of Salyrgan by the Council on Pharmacy and Chemistry was published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. We decided then that the effect of Salyrgan suppositories should also be included in our study.
>
> Eighteen cases were followed and the condition of the rectal mucosa was noted in each before and after the administration of the Salyrgan suppository. No patient was given a Salyrgan suppository if ulceration, fissure, congestion or other pathologic changes in the rectum were noted.
>
> Of the eighteen patients, eight (44 per cent) showed definite rectal irritation, either a proctitis, ulceration or a marked congestion of the rectal mucosa after the suppository had been given. Three of these

patients complained of considerable rectal pain and anal tenesmus within twenty-four to forty-eight hours after administration of the Salyrgan suppository.

Because of these results we have discontinued the use of Salyrgan suppositories. Even though this work will be subsequently published in full it seemed advisable at this time to call these facts to the attention of the medical profession generally.

On receipt of this inquiry the Council asked Dr. DeGraff for the lot numbers of the product on which his report had been based. In reply Dr. DeGraff stated:

All the salyrgan suppositories were of lot 4579 and were bought through Eimer and Amend, New York City.

Since I wrote my letter to you I have heard indirectly of a number of other cases of rectal irritation from salyrgan suppositories. In the next few days I will try to get the exact information on these for you.

We have tried to reproduce these results in rabbits but were unsuccessful. The salyrgan suppositories did not seem to cause any damage to the rectal mucosa of the rabbit in four experiments. I give you this information because it is rather important for the referee to understand that the results which we are giving you were obtained in man and not in the laboratory animal.

The Winthrop Chemical Company was informed of this matter and in reply stated:

Your letter of Aug. 11, 1937, has just been received and in view of your request for an immediate reply we quickly reviewed the data collected during the experimental period when extensive investigations were undertaken with Salyrgan Suppositories. At the time the observations made not only referred to the efficiency of this preparation but also to any by-effects which might follow its use. The investigations were entrusted to physicians whose ability and facilities for carrying out the required work are unquestioned. While there were some instances of irritation, the greatest number of patients experienced no discomfort and many continued to use these suppositories over a long period of time. We received no reports of ulceration then or since the commercial introduction, notwithstanding the great number of cases in which Salyrgan Suppositories have been used. We are unable to explain the occurrence of ulceration in one of the cases mentioned in the series discussed in your letter, except upon the basis that there was present some unrecognized underlying pathology in the rectum or perhaps that the patient's mucosa was unusually sensitive to the drug.

In view of the instances of irritation which occurred during the experimental period, and in view of the irritating qualities in high and concentrated dosages of mercurial preparations, we continued the investigations even after the commercial introduction of Salyrgan Suppositories, as it is our aim to reduce the possibility of any damage to the rectal mucosa still further. To date, however, we have found no combination as satisfactory as the one now marketed.

In a reply to a subsequent request from the Council office for the names of investigators who are working with the preparations, the firm sent a list of ten physicians. A communication was sent from the Council office to these men and also to some others, asking whether or not they had observed untoward symptoms similar to those mentioned by Dr. DeGraff. Replies were received from seventeen inquiries. Three of these (not from the list submitted by the firm) stated that they had had no experience with Salyrgan Suppositories. The following are considered to be typical excerpts from the replies received:

1. "I have knowledge of four patients who received Salyrgan suppositories. All complained of subjective distress. In one instance this was very severe."

2. "Salyrgan suppositories have been used in only thirty-one or thirty-two cases. Marked rectal irritation was noted in three cases. In two other cases slight rectal bleeding was noted. It has been found that preliminary irrigation is of value in preventing local irritation and it is employed routinely."

3. "As I told Mr. Smoot they seem to be about half as effective as salyrgan intravenously and would therefore prove of great value were it not for the fact that they so frequently produce rectal irritation."

4. "The Winthrop Company sent enough material for clinical work on ten patients. However, the material was used only on eight patients. The rectal irritation was so marked and the anal tenesmus so prolonged that it was decided to discontinue any further experimental work. Of the eight patients given the Salyrgan suppositories, five complained of considerable rectal pain . . ."

5. "We have not used the suppositories and our records show only two patients who had used them before coming into the hospital. Both mentioned the fact that they had considerable irritation as a result of the use of the suppositories."

6. "I wish to state that I have had no extensive experience with them. I have witnessed their effect on several patients and my experience has been that the effect is not so satisfactory as that following intravenous use and in many instances, because of rectal irritation or other factors, sooner or later one has to change to intravenous use."

7. "They were used in about twenty-four cases. . . . In three of the patients, however, the use of the suppositories had to be discontinued because of the rectal burning, which they complained of bitterly."

8. "We received some salyrgan varying from 200 to 500 mg. . . . During the year these have been administered to some twenty-five patients, approximately fifty of the suppositories being used. The majority of these contained 400 to 500 mg. salyrgan and also contained as a local anesthetic 10 per cent anesthesin. . . . The general impression is that they did not produce more in the way of rectal irritation than mercurin suppositories which we have used in a comparable series of patients. There were several instances where the use of the suppositories was followed by transient diarrhea and in one or two instances by rectal bleeding. The latter occurred in a patient who had hemorrhoids. A few of the patients complained of transient rectal irritation and burning. We have not used any suppositories containing salyrgan without a local anesthetic. . . . From our experience we feel that no patient should be given a mercurial suppository as a diuretic who has any symptoms of rectal irritation or who has hemorrhoids. . . . it is our impression that patients have not had more rectal discomfort with the salyrgan suppositories that we have used than with the mercurin suppositories. The incidence of those who did experience discomfort sufficient for them to complain about may be estimated at something less than 10 per cent."

A report on rectal irritation following the use of mercurial diuretics in suppository form was submitted by Dr. Arthur C. DeGraff. An abstract of this is appended. Dr. DeGraff and his associates concluded from their investigation that "Salyrgan suppositories appear to be more irritating than Mercurin suppositories," and "the fact that severe ulceration occurred in three patients out of eighteen would suggest that this dosage form of Salyrgan is inadvisable."

Dr. J. Hamilton Crawford also submitted a preliminary report on local effects of Mercurin and Salyrgan Suppositories. He offered no comment on the results obtained with Mercurin suppositories, for at the time of submission he could report on only two cases in which mercurin suppositories was administered. He reported, however, that of seven patients treated with Salyrgan suppositories two developed definite ulceration. One of these had a normal mucosa prior to administration of the suppositories and one had slight hyperemia before medication.

The Council considered the foregoing and voted (1) that the acceptance of Salyrgan Suppositories be rescinded without prejudice pending the receipt of further reports from the manufacturer; (2) that acceptance of Mercurin be continued but that it be rescinded at any time should evidence become available entailing the necessity of such action as provided in the Council's rules, and (3) that publication of the foregoing report and a warning as to the local irritating effects of both drugs be authorized. The Council, of course, will be ready to reconsider Salyrgan suppositories at any time when it can be shown that their therapeutic action is not complicated by deleterious effects on the rectal mucosa.

The report of Dr. DeGraff and his associates is appended.

RECTAL IRRITATION FOLLOWING THE USE OF MERCURIAL DIURETICS IN SUPPOSITORY FORM

ARTHUR C. DEGRAFF, M.D.; MAX COWETT, M.D.
AND
ROBERT C. BATTERMAN, M.D.

For the past year the effects of mercurial diuretics, when given in the form of a suppository by rectum, have been studied on patients with congestive heart failure. In view of untoward local effects that occurred with the use of one of the preparations now on the market, it seems advisable to report our results in this respect.

Two mercurial diuretics have become available in suppository form for the treatment of edematous conditions. The first to be introduced, in 1934, by Engel[1] is that of Mercurin.[2] The second preparation is that of Salyrgan.[3]

The only mercurial suppository for which, at the present time, there are any references in the literature, is that of Mercurin. Numerous reports[4] are in favor of the clinical efficiency and usefulness of this preparation. In addition, rectal irritation appears to be minimal, for other than a slight "burning" of the mucosa there is no reference to local toxicity.

Because of the possibility of rectal irritation following the insertion of the suppository, the local effects were carefully studied by means of the proctoscope. Each patient was examined before and within forty-eight hours after the insertion of

1. Engel, K.: Peroral Administration of Novurit, Orvosi hetil. **78**: 940, 1934.

2. The suppositories were obtained from a local pharmaceutical supply company. Three different supplies were used. Their lot numbers are unobtainable.

3. The suppositories were obtained from a local pharmaceutical supply company, and were of lot 4579.

4. Epstein, T.: Therapeutic Rectal Application of Novurit Suppository as Diuretic, Gyógyászat **7**: 556, 1935. Dennig, H., and Krause, E.: Diuresis Due to Rectal Administration of Novurit, München. méd. Wchnschr. **82**: 1865, 1935. Parkinson, J., and Thompson, W. A. R.: Mercurial (Novurit) Suppository as Diuretic for Cardiac Edema, Lancet **1**: 16, 1936. Fulton, M. N., Mercurin Suppositories as Diuretic in Treatment of Edema, New England J. Med. **214**: 1092, 1936. Peters, K.: Dehydration of Patients with Heart Disease by Means of Suppositories Containing Novurit, Deutsche med. Wchnschr. **62**: 1379, 1936. Chodowicki, J.: Diuresis after Rectal Administration of Novurit, Polska gaz. lek. **15**: 720, 1936. Herrmann, G., and Decherd, G. M.: Further Studies on the Mechanism of Diuresis with Especial Reference to the Action of Some Newer Diuretics, J. Lab. & Clin. Med. **22**: 767, 1937.

the suppository. No patient was given the preparation if ulceration, fissure, congestion or other pathologic changes in the rectum were noted. A patient receiving one preparation never received the other. A cleansing enema of plain water was given in each case prior to the insertion of the suppository. In all, fifteen patients received Mercurin and eighteen patients received the Salyrgan suppository.

RESULTS

The proctoscopic observations and subjective symptoms of each patient are presented in the accompanying tables. Five of the fifteen patients receiving Mercurin experienced a "burning" sensation, which in all cases but one was described as slight. In two of these five, in addition, the suppository was expelled shortly after its insertion. None of the patients exhibited any alteration of the rectal mucosa as visualized by the proctoscope.

The Salyrgan suppository, on the other hand, was definitely more irritating to the rectal mucosa. Ten patients of eighteen complained of "burning," pain or itching about the rectum. Three had severe rectal pain and anal tenesmus within twenty-four to forty-eight hours after the administration of the suppository. Eight (44 per cent) showed definite rectal irritation, either a proctitis, ulceration or a marked congestion of the rectal mucosa.

TABLE 1.—*Rectal Irritation with Mercurin Suppositories*

Case No.	Subjective Symptoms	Proctoscopic Observations
1	None	None
2	None	None
3	Burning	None
4	None (3 suppositories)	None
5	Slight burning	None
6	None	None
7	None (3 suppositories)	None
8	Slight burning	None
9	(a) Slight tenesmus, abdominal cramps	None
	(b) None	None
	(c) Expelled suppository	None
	(d) Slight burning	None
	(e) Slight burning	None
10	None	None
11	None	None
12	None	None
13	Slight burning, expelled suppository	None
14	None	None
15	None	None

TABLE 2.—*Rectal Irritation with Salyrgan Suppositories*

Case No.	Subjective Symptoms	Proctoscopic Observations
1	Pain and burning	Superficial ulceration at left anal margin; sphincter spasm; ulceration of rectal mucosa; bleeds freely on touch
2	None	None
3	Burning	None
4	Burning	Mucosa injected
5	Pain and burning	Congestion and ulceration of mucosa
6	None	None
7	None	None
8	None	None
9	Pain and burning; expelled suppository; rectal bleeding	Ulceration and fissures at anal orifice; unable to pass proctoscope; marked sphincter spasm
10	None	None
11	Burning	Mucosa injected
12	Burning	Mucosa injected
13	None	None
14	None	None
15	Itching	None
16	Burning	Mucosa injected
17	None	None
18	Burning	Mucosa injected

COMMENT

The marked local irritative properties of mercurial diuretics must be carefully considered before the preparation is to be used. Any drug advocated for clinical usage should be as free as possible from untoward side reactions. Such reactions often invalidate a preparation which otherwise would be of value. There is no doubt that Salyrgan is an efficient diuretic, but its high local toxicity on the rectal mucosa is a decided disadvantage for the administration of the drug in suppository form. Because of our results, we have discontinued the use of Salyrgan suppositories.

CONCLUSIONS

1. Salyrgan suppositories appear to be more irritating than Mercurin suppositories.
2. The fact that severe ulceration occurred in three patients of eighteen would suggest that this dosage form of Salyrgan is inadvisable.

Council on Foods

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. FRANKLIN C. BING, Secretary.

ALLOWABLE CLAIMS FOR THE VITAMIN AND MINERAL CONTENT OF CANNED FRUITS AND VEGETABLES INTENDED FOR INFANT FEEDING

It is desirable that canned sieved fruits or vegetables, prepared for the feeding of infants or for special diets, should retain as much as possible the vitamin and mineral content of the raw fruits or vegetables from which they are made.

On the basis of available evidence the Council previously recognized the general claim that accepted products in this class "retain in high degree the vitamins and mineral salts of the fresh vegetable (or fruit)," provided the manufacturer was able to furnish satisfactory evidence that the manufacturing process was the most efficient available for the conservation of vitamins. The Council has also held the view that, wherever possible, vitamin claims should be specific and supported by acceptable evidence for the presence of the individual vitamins in the quantities claimed. Such evidence of the actual potency of the finished product is particularly necessary for those vitamins which are known to be affected or which may be affected by manufacturing processes.

It is now known that in the canning of fruits and vegetables the inorganic salts and some of the vitamins can be retained whereas it is more difficult to conserve vitamins B_1 and C, at least in many products. Methods of assay have been developed to a point at which the Council believes it is feasible to require that advertising claims, at least for the vitamin B_1 and the vitamin C content of canned strained foods, should be based on assays of the individual product. Accordingly the following General Decision has been adopted:

ALLOWABLE CLAIMS FOR THE VITAMIN AND MINERAL CONTENT OF CANNED STRAINED FOODS

Sieved fruits and vegetables prepared for the feeding of infants or for special diets for older children or adults should retain in highest degree compatible with efficient manufacturing methods the vitamin and mineral content of the raw fruits and vegetables from which they are made. Sufficient experimental evidence has accumulated to warrant the view that vitamins A and G (riboflavin) are little affected by good modern canning procedures. It also seems reasonable to believe that very little of the natural mineral content of the food is lost in canning because no liquid other than that in which the food is blanched is discarded after the vegetables have been washed and otherwise prepared for canning. However, there is evidence that vitamins B_1 and C are more or less adversely affected by canning processes, the degree of destruction depending on the characteristics of the food itself, the time and temperature of processing, and possibly other factors. For products for which the Council is in possession of satisfactory evidence that the manufacturing process is designed to preserve vitamins which are easily destroyed by heat and oxidation, or both, the general claim will be recognized that the major portion of the vitamins A and G (riboflavin) and the mineral content of the fresh food is retained. On the other hand, claims for the retention of vitamins B_1 or C or for retention of vitamins in general cannot be recognized unless supported by acceptable evidence of the potency of the finished product. Determination of vitamin C by titration with 2,6 dichlorophenolindophenol will be acceptable for products for which it has been demonstrated that the results of chemical titration are in close agreement with the results of biologic assay. Bio-assays of vitamin B_1 potency will be necessary.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

SUN-JUCE BRAND ORANGE BASE

Manufacturer.—Fliedner-Kersten Corporation, Los Angeles.

Description.—A canned, pasteurized orange base which may be used in the preparation of sherbet, cakes, icings, pastries and confections; contains ground, unpeeled Valencia oranges, dextrose, water, citric acid (U. S. P.) and citric pectin.

Manufacture.—Formula proportions of dextrose are dissolved in a large amount of hot water. Citric acid and pectin are added and the hot mixture is agitated until solution is complete. The mixture is then deaerated and cooled under reduced pressure.

Selected, tree-ripened Valencia oranges of standard grades (not culls) are washed automatically with revolving brushes under high pressure water-sprays. (No spray materials have been used on the oranges but "scale" is controlled by fumigation.) The whole (unpeeled) fruit is coarsely ground with a portion of the dextrose-citric acid-pectin solution. The remainder of the dextrose-citric acid-pectin solution is added and the entire mixture is passed through a colloid mill. Additional citric acid and water are added and the entire batch is thoroughly mixed and pasteurized at 82 C. for thirty minutes. The enamel-lined cans are filled and sealed under vacuum and cooled immediately.

Analysis (submitted by manufacturer).—Moisture 68.2%, total solids 31.8%, ash 0.3%, fat (ether extract) 0.1%, protein (N × 6.25) 0.7%, sucrose 0.3%, reducing sugars as invert sugar 20.2%, crude fiber 0.6%, carbohydrates other than crude fiber (by difference) 23.9%, p_H 1.6, total acidity as citric acid 6.2%, alcohol precipitate (pectin substances) 13.5%, vitamin C (dye titration) 0.017%.

Calories.—0.99 per gram; 28 per ounce.

BEECH-NUT CHOPPED FOODS (CARROTS, BEETS, GREEN BEANS, SPINACH, PRUNES AND VEGETABLE SOUP)

Manufacturer.—Beech-Nut Packing Company, Canajoharie, N. Y.

Description.—(1) Canned, chopped carrots, slightly seasoned with salt. (2) Canned, chopped beets, slightly seasoned with salt. (3) Canned, chopped green string beans, slightly seasoned with salt. (4) Canned, chopped spinach, slightly seasoned with salt. (5) Canned, chopped prunes. (6) Canned, chopped vegetable soup containing carrots, celery, cabbage, tomatoes, rice, barley and onion, slightly seasoned with salt.

Manufacture.—(1) Fresh carrots are washed, mechanically peeled, hand-scraped and chopped. Water and a small amount of salt are added and the carrots are precooked under steam pressure. Glass jars are automatically filled, sealed and heat processed.

(2) Fresh beets are mechanically washed and peeled, sorted by hand and chopped. Water and a small amount of salt are added and the beets are precooked and canned as described for Beech-Nut Chopped Carrots.

(3) Fresh green string beans are washed, stems and blossom ends are removed by hand and the beans are chopped. Water and a small amount of salt are added and the beans are precooked and canned as described for Beech-Nut Chopped Carrots.

(4) Canned, unseasoned spinach packed in California for the Beech-Nut Packing Company is chopped and a small amount of salt is added. The chopped spinach is precooked, and canned as described for Beech-Nut Chopped Carrots.

(5) California dried prunes are soaked overnight, washed, and simmered in an open kettle in a small amount of water for one-half hour. The pits are removed and the prunes are chopped, precooked and canned as described for Beech-Nut Chopped Carrots.

(6) Carrots, celery, cabbage and onions are washed and the carrots are scraped. Formula proportions of these vegetables are chopped together and mixed with weighed amounts of rice and barley which have been precooked for one-half hour. Canned tomato purée and a small amount of salt are added, and the mixture is precooked and canned as described for Beech-Nut Chopped Carrots.

Analyses (submitted by manufacturer).—

	(1) %	(2) %	(3) %	(4) %	(5) %	(6) %
Moisture	90.0	91.1	92.4	93.0	69.6	88.5
Total solids	10.0	8.9	7.6	7.0	30.4	11.5
Ash	0.7	1.3	0.6	1.4	0.6	0.4
Fat (ether extract)	0.1	0.04	0.1	0.4	0.1	0.1
Protein (N × 6.25)	0.8	1.4	1.3	2.1	1.0	1.2
Reducing sugar as invert sugar					20.1	
Sucrose (copper reduction method)					None	
Crude fiber	0.7	0.6	0.9	0.7	0.7	0.4
Carbohydrates other than crude fiber (by diff.)	7.7	5.6	4.7	2.4	28.0	9.4
Calories, per gram	0.35	0.28	0.25	0.22	1.17	0.43
Calories, per ounce	10	8	7	6	33	12

CLAPP'S STRAINED BEEF WITH VEGETABLES AND RICE AND BARLEY

Manufacturer.—Harold H. Clapp, Incorporated, Rochester, N. Y.

Description.—Canned, strained mixture of tomatoes, beef, potatoes, carrots, unpolished rice, celery, whole grain barley, salt and onions.

Manufacture.—Selected beef U. S. Inspected and Passed by the Department of Agriculture is trimmed free of fat and sinew and ground at the packing plant through a disk with one-eighth inch perforations. The ground meat is packaged and shipped in the frozen state to the Clapp plant, where it is again examined by federal meat inspectors and used immediately. Tomatoes, potatoes, carrots, celery and onions grown and harvested under the supervision of the company are cleaned and the potatoes and carrots are mechanically peeled. Rice and barley are inspected and washed. The ingredients in formula proportions are mixed, precooked under pressure with live steam, strained in an atmosphere of steam, adjusted to standard moisture content, filled into cans, sealed and heat processed. Fresh vegetables are used in season; tomatoes and carrots canned at the company plant are used for off-season packing.

Analysis (submitted by manufacturer).—Moisture 86.3%, total solids 13.7%, ash 1.3%, fat (ether extract) 0.9%, protein (N × 6.25) 4.2%, crude fiber 0.3%, carbohydrate other than crude fiber (by difference) 7.0%, calcium (Ca) 0.012%, phosphorus (P) 0.056%, iron (Fe) 0.0018%.

Calories.—0.53 per gram; 15 per ounce.

Vitamins.—Although no evidence has been provided the Council as to the vitamin content of this product, the methods of preparation and processing are designed to retain the natural vitamin values to the highest degree consistent with adequate and safe heating processes. Contact of the product with air during processing is avoided as far as possible.

CELLU BRAND GRAPEFRUIT JUICE

Distributor.—Chicago Dietetic Supply House, Inc., Chicago.

Description.—Canned grapefruit juice packed without added sugar.

Manufacture.—Florida grapefruit is washed and halved and the juice is removed by reaming. In hot weather the fruit is cooled before extraction to prevent fermentation. The juice is strained and pumped into temporary storage tanks. Cans are filled automatically by the so-called vacuum process, sealed and heat processed.

Analysis (submitted by distributor).—Moisture 92.2%, total solids 7.8%, ash 0.2%, fat (ether extract) 0.4%, protein (N × 6.25) 0.4%, crude fiber 0.01%, carbohydrates other than crude fiber (by difference) 6.8%, invert sugar 6.4%, sucrose 0.2%.

Calories.—0.3 per gram; 9 per ounce.

THE CASE OF ASA BRUNSON VS. MORRIS FISHBEIN

(Continued from page 145)

DEPOSITION OF E. W. SCHOEFFEL

Mr. Harrell:—We would like to read the deposition of E. W. Schoeffel, a chemist. It is perhaps a little out of order, but we will connect it up a little later.

The deposition of E. W. Schoeffel, taken on the 25th day of May 1939, at 10 a. m., at room 1540, No. 10 South LaSalle Street, Chicago, Illinois, before Thomas Lewis, was then read in evidence as follows:

E. W. Schoeffel, called as a witness on behalf of the defendant herein, having been first duly sworn by the notary, was examined and testified as follows:

DIRECT EXAMINATION

By Mr. Redmond:

E. W. Schoeffel, Chicago, Illinois, chemist for the American Medical Association Chemical Laboratory, stated that he graduated from the University of Hohenheim, Munich, in basic sciences and received the Ph.D. degree from the University of Wisconsin in 1933. Since receiving the Ph.D. degree at the University of Wisconsin he did chemical patent work for the Wisconsin Alumni Research Association from 1933 to 1936. From 1936 to the present date he has been employed at the American Medical Association. He examines products which are sent in by physicians and examines and standardizes products sent to the Council on Pharmacy and Chemistry of the American Medical Association; also research work derived from further investigation of such products. He then related how he received from Mr. Frank P. O'Hara on June 27, 1938, in the presence of Mr. Edward M. Burke, Mr. O'Hara and Dr. Paul Nicholas Leech, part of the contents of three bottles. He transferred part of the contents of those bottles to bottles which were labeled A, B and C, empty and clean.

Q.—And what if any precautions did you take to insure that no one had access to the liquid or substance which you received from Mr. O'Hara, except yourself? *A.*—During the time I did not work on the substances; they were placed in a safe, to which only I have the key.

Q.—What, if any, analysis did you make of the liquids or the substances which you received from Mr. O'Hara? *A.*—I made a physical and chemical determination of the properties of the liquids.

Q.—Recite the result of your analysis, if any, of the liquids which you received from Mr. O'Hara. *A.*—May I refer to my records to refresh my recollection?

***Mr. Quaid:*—Right there, before any report is made, this isn't connected up in any way; so far as the record now is concerned it is absolutely immaterial.**

***The Court:*—Counsel said that connection would be made; he said it was out of order. Go ahead. The statement to the Court was counsel would connect it up. Counsel may state to the Court the manner in which you expect to connect it up.**

***Mr. Harrell:*—I expect to introduce the testimony of Mr. O'Hara that he received this medicine from Dr. Brunson and that he turned it over to Dr. Schoeffel.**

***The Court:*—The plaintiff was on the stand and testified with reference to the medicine being given to Mr. O'Hara, and when he started to use it, and with that assurance that counsel would connect it up by Mr. O'Hara, possession of it and that he delivered it to this chemist I will overrule the objection.**

Q.—Yes. Do you have an independent recollection of all the results of your chemical analyses? *A.*—Yes, I have.

Q.—Will you recite the result of your analysis, if any, of the liquid which you received from Mr. O'Hara? *A.*—The samples A, B and C appear similar in taste and smell and in physical properties. These physical properties are optical activity and index of refraction. I observed a chemical resemblance through analysis indicating the presence of approximately 95 per cent mineral oil and approximately 5 per cent of volatile terpene-like substances like oil of eucalyptus, mint camphor and traces of terpene-like substances resembling oil of pine and thymol.

Q.—As a result of the analysis which you made of the liquids which you received from Mr. O'Hara, please tell us all of the ingredients or substances contained in said liquids. *A.*—That has been discussed in the foregoing statement.

Q.—Will you recite them again? *A.*—The three liquids received from Mr. O'Hara appear identical in physical and chemical characteristics. My chemical analysis gave evidence that approximately 95 per cent mineral oil is present. A further analysis by me indicated approximately 5 per cent of volatile terpene-like substances resembling oil of eucalyptus, mint camphor and steam distillable terpene-like substances, resembling in taste and smell oil of pine and thymol.

Q.—Doctor, you mentioned "optical activity." *A.*—Optical activity.

Q.—Will you explain what you mean by optical activity? *A.*—By optical activity I mean the turn of the angle of polarized light of a substance when measured in the precision polarimeter at 25 degrees celsius and at the wavelength of the sodium light.

Q.—What do you mean by "index of refraction"? *A.*—By index of refraction I understand the angle of light reflected by which liquids differ from other liquids.

Q.—As a result of your analysis of the liquid which you received from Mr. O'Hara, have you an opinion within a reasonable degree of chemical certainty as to what was the contents, substance and ingredients of and in said liquids? *A.*—Yes, I have an opinion.

Q.—And what is that opinion? *A.*—In my opinion, these liquids contain approximately 95 per cent mineral oil and approximately 5 per cent of volatile terpene-like substances, such as oil of eucalyptus and mint camphor.

Q.—Did you make a report of your analysis of said liquids which you received from Mr. O'Hara to any officer or official of the American Medical Association? *A.*—Yes, I did so.

Q.—And to whom did you make such a report? *A.*—I made that report to Dr. Leech and in this report included a synthetic mixture which duplicated in smell, taste and appearance the three said liquids under investigation.

Q.—Will you explain what you mean by synthetic mixture? *A.*—By synthetic mixture I understand the mixture which was made up from the knowledge gained by my analysis and duplicating smell, taste and the index of refraction of the liquid under analysis.

Q.—Do I understand that you took some mineral oil, 95 per cent mineral oil and 5 per cent of volatile terpene substances and mixed the two together in an effort to duplicate the liquids which had been presented to you for analysis? *A.*—Yes, I did. I added 95 per cent mineral oil, 0.5 Gm. of menthol, 2.5 cc. of oil of eucalyptus, with an approximately 80 per cent cineol content, approximately 2 to 5 drops of oil of pine and approximately 1 to 2 drops of oil of thyme per hundred cubic centimeters. This mixture on standing and at the time of making resembled said liquids A, B and C in taste and smell, in specific gravity and index of refraction closely, so that I and various members of the laboratory were not able to detect any distinguishable differences.

Q.—Do you believe that the synthetic mixture which you prepared was the same as the substance which had been submitted to you and previously described by you as liquids A, B and C? *A.*—I would say that they resemble each other in taste and smell and physical characteristics to a very close degree.

Q.—Is that degree close enough to lead you to believe that they were practically identical substances? *A.*—In the field of terpene chemistry a definite statement of exact duplication is out of the realm of certainty, but in my opinion they were practically identical substances.

There was then submitted in evidence a detailed report of Dr. Schoeffel's analysis of the specimens concerned.

Wednesday, May 31—Afternoon Session

Mr. Quaid:—We will now read the cross interrogatories propounded to Dr. Schoeffel.

WRITTEN CROSS INTERROGATORIES

Propounded by the Notary:

After questions identifying the witness, interrogatories proceeded:

Cross Interrogatory No. 10:—If you say you analyzed the said fluid, state the period of time that was consumed in your analysis? *A.*—Approximately two months, but this total time was not always taken up with the analysis for these liquids, but

it comprised the period of the analysis for these liquids. A rough approximation of time, should the analysis be done in consecutive time, may be approximately a week and a half.

Cross Interrogatory No. 14:—Who paid you for making the analysis, and how much? *A.*—The American Medical Association pays my salary. There is no payment for analysis itself, since I am on a salary employed basis.

Cross Interrogatory No. 16:—Did you find carbon, hydrogen, oxygen and possible nitrogen, in your analysis? *A.*—I found that the liquids contained combustible material with a practically negligible ash content and with no definite indication of readily detectable nitrogen.

Cross Interrogatory No. 17:—State how much of each element you found in your analysis. *A.*—No combustion analysis was performed. An approximate group analysis, or analysis of constituents, was performed.

Cross Interrogatory No. 18:—Could you actually determine each ingredient? If so, name same. *A.*—The ingredients were determined and I found that approximately 95 per cent mineral oil as a base and approximately 5 per cent volatile terpene-like substances were present in the liquid.

Cross Interrogatory No. 20:—Approximately how many organic substances exist? *A.*—In this substance under investigation a chemical analysis shows that there are at least one definitely determined constituent, which is mineral oil, approximately 95 per cent, and approximately 5 per cent of volatile terpenes, such as oil of eucalyptus or mint camphor. If the question means organic chemicals in existence, we have approximate 400,000 organic chemicals.

Cross Interrogatory No. 21:—If you state there are approximately 100,000 organic substances, state how many test tubes you had to use for the purpose of ascertaining whether or not any of those 100,000 organic substances were in the formula. *A.*—The question is below the dignity of the court. Such an analysis has never been performed and is not performed.

Cross Interrogatory No. 22:—To ascertain an unknown organic substance, when you have no idea what that substance is, the tester takes the analysis of all organic substances, does it not? *A.*—No.

Cross Interrogatory No. 23:—To accomplish this, when several gallons of the fluid are being analyzed, it would be necessary to make a complete chemical test? *A.*—It is rarely the case that several gallons are used for chemical analysis. In many cases it is sufficient to use a smaller portion, approximately 5 to 10 cc., which gives adequate knowledge as to the constituents named therein.

Cross Interrogatory No. 24:—Is it a fact that, when you analyze for a substance, the chemical under intense heat carbonizes, and it is necessary, in continuing your hunt, to get a new sample of the medicine? *A.*—Yes, under intense heat, organic chemicals break down. But at the same time the expert can obtain valuable information as to the contents under analysis. A careful chemist does not investigate all of his product under investigation in one investigation but keeps sufficient material for repetition of his tests and for further examination, should a combustion have yielded him information which leads to further analyses.

Cross Interrogatory No. 25:—State how much of the formula you used for each experiment when you were looking for an unknown drug in 100,000 existing possibilities. *A.*—There are various ways by which a trained expert will use his technical skill in investigating a product under analysis. Present day scientific methods may use as little as 0.1 cc. or its equivalent in weight to make a complete investigation, as far as chemical evidences may carry. In my tests I used from 0.1 to 5 cc. depending on the various tests under investigation.

Cross Interrogatory No. 26:—Can any chemist tell from an analysis whether a medicine compound is, or is not, physiologically incompatible? *A.*—A skilled expert, with the necessary, requisite training, is able to find incompatibilities of various medicines, should such exist, within the scope of present day chemical knowledge.

Cross Interrogatory No. 27:—State whether or not any medicine is chemically incompatible but not physiologically so. *A.*—This question is out of my realm of activity and belongs to the clinical physiologic expert.

Cross Interrogatory No. 28:—Is it not a fact that, when they are incompatible chemically but not so physiologically, that they are successfully employed by physicians? *A.*—I would give the same answer as before.

RE-DIRECT EXAMINATION

By Dr. Redmond:

Q.—Doctor, into how many groups are the 400,000 organic substances divided? *A.*—Organic chemistry is the chemistry of carbon and its substitution products. As such, it is developed into a most logical science of classification. Organic chemicals can be grouped into three definite classified systems, namely acyclic, cyclic and heterocyclic. Each group is in turn subclassified. With this classification it is possible to distinguish readily between the various group members of various systems. Terpenes as found in certain products are a group belonging mainly to the group of the cyclic system and, as such, have various characteristics which are detectible with ease by the trained chemist.

Q.—By that, do you mean Doctor that, in order to determine what organic compound is present in a substance submitted to you for examination, it is not necessary to make a separate test for each of the known organic substances? *A.*—No. Such an analysis is not made.

Q.—Do you mean, Doctor, that it is possible to determine by chemical analysis the presence of a particular group of organic substances? *A.*—Yes, it is.

Q.—And then, when you talk of a subdivision, do you mean that in that particular group additional tests are made to determine which one of the members of the group is present? *A.*—Yes, there are.

Q.—Was organic chemistry originally conceived to be the chemistry of the carbon compounds? *A.*—Not until the year 1860, when Kekule announced the discovery of the ring system.

Q.—So, organic chemistry at the present time means the chemistry of the carbon compounds? *A.*—And their substitution products.

Q.—Do most of the organic substances contain carbon and one or more of the following elements: hydrogen, oxygen, nitrogen, sulfur, chlorine, bromine, iodine and phosphorus? *A.*—Organic chemicals are classed in respect to their carbon and hydrogen content and are classified in respect to their additional or substitution products.

Q.—Doctor, when you were making your examination of the substances which had been submitted to you by Mr. O'Hara did you need any further samples than that which you had been furnished? *A.*—No, I did not.

Q.—Did you have sufficient for your purpose? *A.*—I had sufficient and I have still retained a small quantity.

TESTIMONY OF DR. L. J. MOORMAN: ON DIRECT EXAMINATION

Questions by Mr. Reynolds:

Dr. L. J. Moorman, Oklahoma City, practices in internal medicine, with special attention to the diseases of the lungs. He is medical director of the Farm Sanatorium for the treatment of lung conditions. He entered medical school with a B.S. degree and graduated in medicine from the University of Louisville, Ky. After graduation in 1901 he went to New York City for postgraduate work in 1903. In 1906 he went to the University of Virginia for graduate work in laboratory and to review medicine. In 1909 he went to Europe for postgraduate work and spent seven months in the University of Vienna, studying medicine with special attention to pathology, and in that line particularly with reference to pathology of the lungs and the respiratory system. He visited hospitals in London and Liverpool. He went to Boston for special work in tuberculosis, and then to Saranac Lake for some work. Since then he has attended medical meetings and visited clinics and hospitals all over the country. He is a member of the county medical society, the state medical association, the American Medical Association, the American Climatological and Clinical Association, the Southern Medical Association, and the National Tuberculosis Association and American Sanatorium Association. He is now vice president of the American Sanatorium Association. He is a member of the Oklahoma City Academy of Medicine, the state tuberculosis association, and has been president of the Oklahoma City Tuberculosis Association for twenty-two years and director of the Tuberculosis Dispensary in Oklahoma City for twenty-two years.

Q.—Doctor, in this regard, is there any agency in this country which classifies or certifies specialists in the field of tuberculosis? *A.*—Well, there is the American Board of Internal Medicine, which does standardize and classify physicians in internal medicine, with special attention in tuberculosis; that is the way I am classified.

Q.—Are you certified to that board as a specialist in tuberculosis? *A.*—Yes, I am. I think I failed to mention a while ago that I am a member of the American College of Physicians.

Q.—Now, Doctor, will you tell us the hospitals and institutions with which you have been or are now connected in tuberculosis work? *A.*—Well, I am now medical director of the Farm Sanatorium and have been for twenty-six years; I have been connected with the University of Oklahoma School of Medicine for—I was there about eighteen or twenty years, and taught physical diagnosis and was clinical professor of medicine for several years, being advanced from lower positions. I was dean of the Medical School for three years and was superintendent of the University Hospital and Crippled Children's Hospital, those two institutions having about 400 beds, and there I had the direction of the—taught physical diagnosis and had direction of the diseases of the chest in the hospital wards and also supervision over the hospital in general and attended the postmortem findings in connection with the University Hospital.

Q.—Doctor, will you state the nature of this Farm Sanatorium, with which you are connected, how many patients it accommodates and how many beds it has? *A.*—For a time we had fifty beds, with an average of about forty-five patients; in the last ten years the number has been reduced and we now are using twenty-five beds.

Q.—Doctor, have you ever had original articles written by yourself accepted for publication in medical or other journals? *A.*—I have.

Q.—How many on the subject of tuberculosis, just in a general way? *A.*—I should think twenty or thirty.

Q.—And over what period of years? *A.*—Over a period of twenty-five years.

Q.—In what journals, just name a few of them? *A.*—Well, I have had articles published in my state journal, state medical journal, in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, the *Minnesota State Medical Journal,* the *Kansas State Medical Journal,* in the *American Review of Tuberculosis,* in *Annals of Internal Medicine,* which is the official publication of the College of Physicians, and in *Annals of Medical History.* I wrote a chapter on gas hazards in connection with the production and refining and consumption of petroleum and its products for Oxford Medicine. That covers the field, I think, pretty well.

Q.—Now, Doctor, have you ever been called before to testify as an expert in cases involving alleged tuberculosis cures? *A.*—Yes, sir, I have.

Q.—Will you tell us what occasions? *A.*—In 1918 I was requested by the federal government to go to San Antonio to testify in connection with an alleged cure of tuberculosis, which was an inhalation cure, so-called Thompson cure. I have testified repeatedly before the Oklahoma State Industrial Board in cases having to do with injuries to the thorax or the chest, and some of them where tuberculosis was the main factor in the case.

Q.—Doctor, how many autopsies have you performed or observed during the time that you have been specializing in tuberculosis? *A.*—I could not state definitely, but hundreds, I would say.

Q.—And over what period of time? *A.*—Over twenty-five years' time.

Q.—Have you observed any recently or performed any recently? *A.*—I have. Hardly ever a month goes by but what I perform or observe autopsies.

Q.—Now, Doctor, will you tell us how you became interested originally in the subject of tuberculosis? *A.*—Well, I became interested originally because I was practicing medicine in Oklahoma City, associated with two surgeons with a statewide reputation and practice, and at that time, thirty-one or thirty-two years ago, the state of Oklahoma was largely populated by young people, many of them having no homes, and at that time there was a great popularity with the idea of climatic treatment, and my association with these surgeons placed on me the responsibility of every medical examination and medical decision with reference to referred cases, and I felt like I was living in a good climate and didn't wholly share the idea that people, to get well of tuberculosis, should go west, and it was in a way forced on me because of the fact that I frequently discussed tuberculosis, seeing the need of treatment, and I got interested in the treatment of it, and out of that grew my private institution. I later on had tuberculosis myself, and that enhanced my interest and also my knowledge of the disease.

Q.—How long ago was it that you had tuberculosis? *A.*—About twenty-four years.

Q.—Doctor, have you made any particular study of the history of tuberculosis and medical developments along that line? *A.*—Yes, I have.

Q.—I will ask you, Doctor, if it is your opinion in connection with the treatment of tuberculosis that the pus accompanying tuberculosis is the thing at which treatment should be directed? *A.*—I would say no.

Q.—Will you explain why? *A.*—Tuberculosis is a disease caused by specific germs or microscopic organisms which enter the body in various ways. The germ has a predilection or predisposition to localize itself in the lung and later in the glandular structure about the root of the lung. It may locate in other parts of the body. It begins its work without influence of any other microscopic organisms and gradually develops tubercles with ultimately the death of the tissue cells, the elimination usually of the blood supply, and while all that is going on, the patient may be having the classic symptoms of tuberculosis and may have some obvious signs of tuberculosis that are to be observed by examination and still not have what we call open tuberculosis with sputum and the germs of tuberculosis in the sputum, and a patient may die from tuberculosis without having purulent sputum. That is particularly true of the type we term miliary tuberculosis, and that comes around usually because the tuberculous process may reach the point of ulceration, we will say, in one of the glands in the root of the lung without any additional or so-called or outside or mixed infection from other bacteria. A lymph gland may ulcerate and rupture through the wall of the blood vessel and give rise to what we call miliary tuberculosis, which may be limited to one organ or may be in the general organs of the body and the patient may be overwhelmed by such a condition without having any sputum or purulent sputum. Meningitis in children, infants and young children may come about in the same way and called. Now, if this tubercle through the death of the tissue softens, as we say becomes necrotic, and lodges in the bronchus, then there may be purulent sputum and the germs of tuberculosis are then found in the sputum but the treatment remains the same as it would if this had never happened, and the arrestment or clinical cure of tuberculosis rests on the same principles of treatment. These so-called pus producing bacteria give rise to so-called mixed infection and are constantly in the respiratory tract and can be demonstrated at any time whether a patient is well or sick.

Q.—In the theory of treating tuberculosis by eliminating pus that, in effect, is an attempt to treat the effect rather than the cause, is that right? *A.*—I would say that.

Q.—Doctor, is it a new or novel idea to have that theory that treatment of the pus or the effect is the treatment recommended for tuberculosis? *A.*—No, it is not.

Q.—Do you know when it ever has been advanced before? *A.*—I do not know when. I can't give dates. If you refer to a treatment by inhalation or spraying, we can date it back approximately 300 years. A physician named Bennett is reported to have employed such treatment as early as 1664. Linick in 1819 tried a similar treatment and others about that time. Then the literature dealing with the history of tuberculosis supplies a long chasm or gap with reference to this method of treatment, as far as I have been able to discover in my studies of the history of tuberculosis. In 1882 the tubercle bacillus was discovered. Even before that time we had discovered that rest was of value in the treatment of tuberculosis and it still is one or the one great factor in treatment of tuberculosis.

Q.—Has this theory of inhalation ever been accepted by the medical profession generally? *A.*—May I just say a few words before answering that question directly?

Q.—Certainly. *A.*—I was going on to say with the discovery of the tubercle bacillus and with the discovery that tuberculosis was often curable when diagnosed early enough, there was a great revival in the interest of the treatment of tuberculosis and in the last quarter of the nineteenth century there was a trial of inhalation cures and sprays and somebody a hundred years ago had invented a nebulizer and that was used for this purpose as well as the volatile oils and medicines which might be volatilized and inhaled and it was simply a trial of another agent and revival of something that had been tried before and discarded. By 1915 or 1920 all of this again was given up as far as I am able to determine without any hope of success. That is about the history of the inhalation treatment.

Q.—Do you know why it was discarded? *A.*—It was tried by some very able men and statistics were accumulated and control cases were followed along with those treated, and there was no definite evidence that it was even aiding in the cure of tuberculosis and that is why it was discarded.

Q.—Now, Doctor, is it your opinion that every human being has the tubercle bacilli in his system? *A.*—It is my opinion that today we couldn't say that every human being harbors the tubercle bacillus in his body. That was taught in the past by some very good authorities but we have a way of determining who has and who has not live tubercle bacilli in the body, that is the tuberculin test, and it is a very accurate test when accurately administered with potent and pure tuberculin and we feel that when there is a positive tuberculin test we may be reasonably sure that live tubercle bacilli are in the body. If the test is negative after at least three attempts with solutions of advancing strength we feel pretty sure there are not any live tubercle bacilli in the body.

Q.—In connection with your work of performing autopsies have you ever examined lungs in which you definitely concluded there were no tubercle bacilli? *A.*—I have examined lungs where I could find no evidences of active tuberculosis and I have examined lungs where I could find no scar tissue, where I would be suspicious of the presence of tubercle bacilli. In the ordinary autopsy in the gross study of tissues it would be impossible to say that tubercle bacilli are present or absent.

Q.—Now, Doctor, is it your opinion that every person has tuberculosis even though in very slight degree? *A.*—I think that is not true today. It seems to be less as time goes on. A few children of school age react to tuberculosis and in rural communities we find groups of people relatively free from tuberculosis. In urban population the incidents or the rate of infection rules very high after the population reaches an age level of 18 or 20 years anyway.

Q.—Now, Doctor, is there a specific clinical cure for tuberculosis accepted by medical science today? *A.*—I doubt if I would be justified in saying there is a specific cure for tuberculosis. The one thing more nearly approaching a specific cure than any other one thing is rest. Rest for early cases approaches the power of a specific in the cure.

Q.—What does specific mean? *A.*—A specific remedy for disease means a remedy that cures, absolutely cures.

Q.—Medical science does recognize rest, however, as a clinical cure. Is that right? *A.*—Yes.

Q.—Is there any bacteriologic cure? *A.*—I would say no.

Q.—By that you understand the meaning to be the eradication of the bacilli? *A.*—I would be afraid to say definitely that the bacillus in any given case can be eradicated no matter how long we pursue the cure, but I am of the opinion that in some cases that may happen as an ultimate result, but we physicians recognize the fact that although we feel we have effected a clinical cure the tubercle bacillus is pretty apt to remain encapsulated in the organism and may at some future time, particularly if the human organism is placed under undue strain, physical or mental or subjected to other diseases which lower resistance, tuberculosis may return. There may be a reactivity of the apparently healed.

Q.—In your own experience you have experienced a clinical cure. Is that right? *A.*—Yes, indeed, often.

Q.—I will ask you if this statement is scientifically sound: "It is the pus germ that does the most harm"? *A.*—I do not think that is scientifically sound.

Q.—On what do you base your opinion? *A.*—On the statement which I made a few minutes ago about the progress of the tubercle under the influence of the specific cause, the tubercle bacillus.

Q.—In that statement of the progress of tuberculosis from what sources have you or has medical science obtained that knowledge and opinion, from what method? *A.*—From the clinical study of our patients, including all of the methods which we have for the accumulation of knowledge from a study of gross and microscopic pathology.

Q.—What is the study of microscopic pathology? *A.*—When I say gross and microscopic pathology we first get all the information we can by inspection of pathologic specimens. By microscopic pathology I mean cellular pathology, and that can be studied only under a powerful microscope and the character of the tissues and cells can be determined by microscopic studies and a great deal of knowledge with reference to the finer characteristics of tubercles has been discovered in that way. Grossly we can tell there is a tubercle, which means a nodule or tumor varying in size, but to know the finer structure we must use a microscope.

Q.—You have done some of that work yourself? *A.*—I have.

Q.—Now, Doctor, is this statement true: "There is no patient with tuberculosis that does not cough"? *A.*—That is not true.

Q.—Will you explain why? *A.*—Because any human being may have tuberculosis in any part of the body, in any organ or any tissue and tuberculosis even in the lung may not be so situated and of such a nature—and it is well to understand that it varies greatly in its manifestations—it may not be so situated and of such a nature as to create the irritation of nerve endings which gives rise to the cough reflex and causes the impulse to cough.

Q.—Now, Doctor, is this statement true: "There is only one type of tuberculosis"? *A*—Specifically that may be true if you will refer back to one specific cause, the tubercle bacillus, but I have just said that tuberculosis varies greatly in its location and its pathologic manifestations and its symptomatology and there are a good many different types of tuberculosis.

Q.—Now, Doctor, in the anatomy of the human body is it true that the larynx opens into the esophagus? *A.*—No, it is not.

Q.—Is it true that the pharynx opens into the windpipe? *A.*—I would say that both the windpipe and the esophagus open in the pharynx.

Q.—How about the larynx? *A.*—And the larynx is the capital of the windpipe or the top of the windpipe and it is through the larynx that the windpipe opens into the pharynx.

Q.—That windpipe you call the trachea? *A.*—The trachea.

Q.—Is this statement true: "The air cells of the lungs are closed on inspiration"? *A.*—Not as far as my knowledge goes, that is not true.

Q.—Is it true that the air cells of the lung are open on expiration? *A.*—The air cells are open on inspiration and on expiration.

Q.—Now, with reference to what are known as the alveoli, what are they, Doctor? *A.*—Air cells.

Q.—And your answer is the same to that? *A.*—The same.

Q.—Now, Doctor, in connection with the tubercles where they appear in the larynx, is it physically possible in any patient to see nodules from tuberculosis on the larynx merely by opening the mouth, putting a tongue depressor in the mouth and looking down? *A.*—I have never seen a case where that could be done.

Q.—In your opinion is it possible? *A.*—In my opinion it is physically impossible.

Q.—Have you an opinion whether or not tuberculosis of the larynx could be diagnosed by inserting a tongue depressor and looking in it? *A.*—In my opinion it could not be.

Q.—Now, Doctor, in connection with this next question, I want you to assume a treatment or alleged treatment for pulmonary tuberculosis consisting of the administration of an oily liquid by means of an atomizer to which is attached an oxygen tank, that the pressure gage on the oxygen tank shows the pressure from 35 to 40 pounds, that the tip of the atomizer is placed in the mouth and that the oxygen is released so that it goes through the atomizer and produces a vapor from the oily substance and ten inhalations are made by the person, that this treatment is repeated twice daily, that the composition of the oily substance contained in the atomizer is approximately 95 per cent mineral oil and a 5 per cent volatile terpene-like substance including oil of eucalyptus and menthol, sometimes known as mint camphor, and also terpene-like substances similar to oil of pine and thymol, have you an opinion, Doctor, as to whether or not that treatment might or could have any beneficial effect in the treatment of pulmonary tuberculosis?

***Mr. Quaid:*—Your Honor, though the field of an expert is pretty wide, we do not believe it is that wide, unless he can give something to show that he has some information about that character of treatment, has used it himself. I do not believe he should be allowed to answer a hypothetical question.**

***The Court:*—He is an expert, he is asking whether on that predicate he could express an opinion. He can say whether he can or not, if he can he can then state what it is.**

***Mr. Quaid:*—We feel a man can testify about the things he has experience with but he has not shown he has had experience on that matter.**

***The Court:*—That goes to the weight of the testimony: You may interrogate him further. The hypothetical is being propounded to him as an expert whether he can express an opinion on that predicate, and if he says he can, he can state what it is. It would be admissible. You then have the privilege of testing his ability to answer that question. Exception overruled.**

A.—Yes, I have an opinion.

Q.—Will you state what your opinion is, whether it could or might have any beneficial effect as a treatment for pulmonary tuberculosis?

***Mr. Quaid:*—We renew our objection unless he has had some experience in this line. Even an expert is not supposed to testify to matters he has no experience in.**

***The Court:*—He is himself qualified to treat tuberculosis and he is an internal medicine man. Overrule the exception.**

Q.—What is your opinion, Doctor? *A.*—My opinion is that it could not have beneficial effect, and if I may supplement that answer, it is my opinion it might have a detrimental or harmful effect, and if I may go further, I would qualify that answer by saying that opinion is based on my knowledge of the damage which comes from overworking any inflamed organ. The deep inhalation is bad for an inflamed or diseased lung and that is one reason why rest, either general which slows down respiration and makes it more shallow, or rest locally which is brought about by various collapse therapy methods, is one reason why we get benefit because we rest the lung. If you overwork it for the purpose of getting some medical treatment in the bronchi or air cells, you might do harm. If the person goes and comes for the treatment, the exercise required to make the trips increases the depth and volume and frequency of respiration and might also add to their harm. The substances you mention might also be harmful. Petroleum or liquid petrolatum or vaseline is an irritant in the lung and in addition, it might have a toxic effect through its retention in the smaller bronchial tubes, air cells and sometimes even produce a pneumonitis or pneumonia. That has been demonstrated time and again. Oil merely dropped into the nostrils, especially in the nostrils of children, may give rise to the pneumonia. At the last session of the American Medical Association there was an exhibit of lungs removed from infants and children showing the evil effects of the inhalation of oils, often to the point of definite pneumonia.

Q.—Doctor, I believe you stated that you have done special work in connection with the effects of working with oil in the lungs? *A.*—I cannot say I have done special work. It has been used as a diagnosing agent because it is opaque before the x-rays even in the tuberculous. In the early history of its use one of our greatest chest surgeons on this continent, Dr. Archibald of Montreal, warned against its use for diagnostic purpose because he observed that acute inflammatory condition in his patients at times and thought, perhaps, it was a flare-up of the tuberculosis. We are not sure whether he may have been observing a nontuberculous pneumonia from the oil alone or a tuberculous pneumonia from presence of iodine that was in this oil, but in either event the inhalant or the instillation, I might say, in this case of the oil, proved to be harmful. I might go further and say that practically all of the oils and volatile aromatic agents such as you mention, eucalyptus, menthol and thyme, have been employed before and discarded because they did no good and because sometimes it was evidently proved to be irritating to the mucous membrane.

Q.—Now, Doctor, would it make any difference in your answer if that liquid consisted not of the exact terpene-like substances I mentioned but of other similar oils and in different proportion? *A.*—In my opinion it would make no difference as far as my own judgment is concerned. I would feel it would make no difference.

Q.—Now, Doctor, just tell us what the difference is between subjective and objective symptoms. *A.*—Subjective symptoms are symptoms which are conceived in the mind of the patient and are presented to the physician by the patient.

Q.—In other words, he tells you how he feels? *A.*—He tells you how he feels. Objective symptoms are those that are obvious to the examining physician.

Q.—In listening to a man's chest with a stethoscope, that is objective? *A.*—Yes.

Q.—And the determination made from that is objective? *A.*—Yes.

Q.—And from x-ray? *A.*—Objective.

Q.—And from sputum? *A.*—Objective.

Q.—No subjective to any of those? *A.*—No.

Q.—In connection with pulmonary tuberculosis what would, for instance, be a subjective symptom? *A.*—A subjective symptom would be a patient's complaint of pain or nervousness or tickling in the throat or an inclination to cough; that is something I cannot see or feel or hear, but I can hear the patient make the statement.

Q.—Now, Doctor, with reference to this oily solution that I described a minute ago, is there anything in that solution at all that is antiseptic? *A.*—I do not know just what is in the solution and I know this, that regardless of claims with reference to the virtues of antiseptic solutions, they never enter the throat or respiratory tract to kill the germs without doing harm to the tissue they come in contact with.

Q.—Will you describe to the jury just exactly what happens to a patient suffering with pulmonary tuberculosis, tracing the oil from the entry of the mouth into the lung, if it gets into the lung? *A.*—You mean what happens in case such a treatment is administered?

Q.—Yes. *A.*—I would say that the patient is inhaling with a rate and depth of respiration which in all probability is exaggerated and which is not good for the patient, as I have explained. I would say that the patient might first have a sensation of the presence of whatever medicament is being administered and have irritation and inclination to cough immediately. They become more or less adjusted to the process of treatment as seconds transpire and there might be some increase in secretion because of the stimulating and irritating qualities of the drugs administered; but that secretion would not particularly influence the outflow of pus that might be present unless the stimulation of cough might bring it up, but it would be an added secretion or liquid due to the activity of mucous glands. It would be an outflowing of mucus and maybe some increase in expectoration on that account.

Q.—Now, Doctor, what actually happens to the oil? Does it penetrate into the tissues of the body, in your opinion? *A.*—In my opinion it would not. If any of the oil or accompaying drugs were absorbed by the blood stream or even the lymphatics, that drug, no matter in what form it is carried into the blood or the lymphs, would not reach, and certainly would not reach the center of the tubercle, because, as I explained a while ago, as the tubercle develops the blood supply and circulation is cut out of that tubercle and that is what brings about the gradual death of tissue cells in the center of the tubercle. Medicine, even though it enters the blood stream, would not get to the tubercle. Besides, even though it might have some inoperative action, it would not cure tuberculosis because it would not reach the tubercle bacillus, which is in the center of a destructive process, with the facilities for conveyance of the medicine cut off.

Q.—Now, Doctor, how many different types of rales are there to be heard in the lung in cases of tuberculosis? *A.*—Well, I would say that there is some variation of opinion as to classification of rales, but we think the simplest and most workable for the physician is to classify rales into crackling and musical rales. Crackling rales are further classified into fine, medium and course crackling rales, and sometimes have bubbling rales and rales in the bronchial tubes and trachea. Then under the classification of musical rales we would say sibilant, which is very fine wheezing or musical sounds, and sonorous rales, which sometimes are something like moderate snoring sounds. We might say crackling rales are instantaneous, without duration, because if they do have duration, they run on as a musical sound, wheezing, whistling, or fine crackling sounds—

Q.—The presence of rales on stethoscopic examination and increased body temperature and lowered blood pressure may be symptoms accompanying pulmonary tuberculosis, is that correct? *A.*—Yes, that is true.

Q.—Now, Doctor, may they be present and accompany any other disease or dysfunction other than pulmonary tuberculosis? *A.*—Quite so, they may.

Q.—How many? *A.*—Oh, I think several others. One is influenza, especially with a localized pneumonitis, pneumonia, just as we have tuberculosis in early stages or moderately advanced stages, bronchial pneumonia, even lobar pneumonia in certain stages, bronchiectasis, which is an inflammation leading to dilatation of the bronchial tubes and the presence of pus, and periobronchiectasis. Those are among the things. I could name others, which would not be so puzzling in diagnosis. I might add lung abscesses would be another case.

Q.—Then in the complete diagnosis of pulmonary tuberculosis would it or would it not be, in your opinion, the better practice to include discovery of those symptoms, to include with the discovery of those symptoms sputum examination, x-rays and other means of determining the disease?

***Mr. Quaid:*—I think that question is leading.**

***Mr. Reynolds:*—I said would it or would it not.**

***The Court:*—Probably is. The question is leading. Counsel will redraft question.**

***Mr. Reynolds:*—I will withdraw the question.**

Q.—Doctor, in making a complete examination for the purpose of diagnosing tuberculosis would you include any other examinations than those four? *A.*—Yes, I would.

Q.—What are they? *A.*—I would include an x-ray of the chest, which means the lungs, of course, and I would include

examination of the sputum, and if I were not satisfied with one examination I may make twenty or forty before making a final diagnosis, because a decision with reference to treatment is very important. One must first make a diagnosis before he can intelligently treat a case, and in making that differential diagnosis in determining whether it is this, that or the other, we feel that we are not doing justice to our patients first of all, or to ourselves as physicians, until we apply all possible means of making a definite diagnosis. Those means include careful examination of the sputum, and sometimes even culture of the sputum as well as microscopic study of a smear.

Q.—What is culture? *A.*—Smear the material on a chosen culture medium and place that in an incubator at a desirable temperature for days of observation, produce a growth of the tubercle bacilli if that is what we are looking for, which might not have been discovered under the microscope. If we still feel doubtful we might do an animal inoculation for the purpose of seeing if we can reproduce a disease in a guinea pig, for instance, or a rabbit.

Q.—At one time in connection with treatment for pulmonary tuberculosis there was a theory advanced called an exercise theory; is that correct? *A.*—That is correct.

Q.—And at what was it aimed? What was the theory? *A.*—I have often wondered what and why, but it was in vogue in the latter part of the nineteenth century. One Bodington conceived the idea of a modified rest cure for tuberculosis and ventured to write an essay on such a radical procedure. That was the latter part of the nineteenth century. It was such a departure from what had gone on in the past that he was accused of being insane and his little private institution was converted from the purpose of treating chronic cases to an insane asylum. Later on Brehmer, in Germany, discovered this essay and built the first or at least established the first sanatorium for the treatment of tuberculosis. He combined with rest the idea of exercise, had all of his paths so that the patient would walk from the sanatorium up hill, but fearing the harm from exercise, fearing he might go too far and find it too much of a task to return, he gave them a down hill return to make it easier for them. Now, for some time that method was observed, and Dettweiler, a famous physician who was unfortunate enough to be a patient of Brehmer, conceived the idea of more rest because he saw the exercise was doing Brehmer's patients harm instead of benefiting them. He was the first to use the so-called reclining chair so the patient could be in a sanatorium yet move out of doors, and so sit or recline in a chair, and Dettweiler drew away from Brehmer and established his own institution.

Q.—This exercise, would it have anything to do with the elimination of pus? *A.*—It may have had, but I couldn't say for sure; I don't know about that. It was abandoned as a pernicious method of treatment.

Q.—Doctor, do you know whether or not, from the standpoint of medical literature and medical research, this statement is true with reference to the treatment I described to you in the hypothetical question, that "similar methods tried elsewhere have proved to be failures," methods similar to the inhalation of oil? *A.*—Yes, as far as I can determine by my contact with physicians over a period of thirty-eight years, and my reading of the history of the treatment of tuberculosis, these things have been tried and abandoned. I remember when they were being tried, and I visited various institutions over the United States and saw the inhalation method with various medicaments in operation.

ON CROSS EXAMINATION

Questions by Judge Sweeney:

Q.—When did you arrive in El Paso, Doctor? *A.*—Sunday morning, about, I think between 9 and 10 o'clock.

Q.—Doctor, since arriving here who have you talked to with reference to what your testimony would be in this case? *A.*—I have talked to the attorneys and have talked to some of my doctor friends, just informal discussion of tuberculosis.

Q.—Who have you discussed it with, what doctor friends? *A.*—Dr. Sam Watson of Tucson, Dr. Corper of Denver, and Dr. Randolph of Phoenix. I don't believe with any one else.

Q.—Did you discuss it with Dr. Hruby of Chicago? *A.*—Yes, Dr. Hruby. I failed to mention him.

Q.—You discussed what would probably be the evidence in this case with your doctor friends, did you not, Doctor? *A.*—Well, not so much that. The most of my time here has been spent just visiting with my doctor friends and trying to learn something more about tuberculosis.

Q.—You discussed the inhalation method of treatment? *A.*—We have, but not particularly in connection with this case.

Q.—With these doctors that you just mentioned? *A.*—What?

Q.—With the doctors that you just mentioned? *A.*—Yes.

Q.—Did you talk to any local doctors here? *A.*—Dr. Egbert.

Q.—Dr. Egbert? *A.*—Yes. I don't think much about this treatment though.

Q.—Did you discuss this case with Dr. Egbert? *A.*—Indirectly, yes, sir.

Q.—You told him you were down here to testify in reference to— *A.*—He knew that before I—I think he indicated that to me when I first met him.

Q.—Now, when did you discuss the case with the attorneys, Doctor? *A.*—I don't know I can say just when. On two occasions I think, in the hotel.

Q.—You have discussed what you were going to testify to, what questions they were going to ask you, and what responses you were to make? *A.*—There was some discussion of that.

Q.—Who was present when that discussion took place, Doctor? *A.*—Mr. Reynolds was present.

Q.—I can't hear you. *A.*—Mr. Reynolds was present, and two or three of the doctors I mentioned.

Q.—Which particular ones, do you recollect? *A.*—Dr. Watson and Dr. Randolph.

Q.—Dr. Egbert? *A.*—And on one occasion Dr. Hruby I think.

Q.—And Dr. Hruby? Now, on that occasion Drs. Watson and Hruby and you were there with the attorneys discussing this case and discussing the evidence in the case, what you were to testify to? *A.*—Nobody attempted to tell me what I was to testify.

Q.—I didn't state that, Doctor, I didn't state that. I say you were discussing informally the evidence that was to be given in the case? *A.*—You have changed the question just a little bit.

Q.—Mr. Reynolds was propounding certain questions to you, was he not? *A.*—I think Mr. Reynolds did suggest what he might ask me, but he did not attempt to tell me what I would say.

Q.—Mr. Reynolds has been reading questions here from this book. Now, were those questions prepared last night or night before last?

Mr. Reynolds:—**I am sorry, Your Honor, but I must object to that. I haven't read many questions. I will show counsel my notes.**

Judge Sweeney:—**I am asking the witness a question.**

Mr. Reynolds:—**And I object to it.**

The Court:—**Read the question.**
(The last question was read.)

The Court:—**I don't know there is any evidence he was reading from a book. The Court does not recall any evidence Mr. Reynolds was reading from any book. He may have been reading from some notes or something of that kind. The Court sustains the exception. You may redraft your question.**

Q.—During the time you doctors were there Mr. Reynolds propounded questions to you with reference to whether or not you believed in the inhalation system, and what you thought of the inhalation system? *A.*—He may have asked that question. He presented some questions.

Q.—He asked you with reference to tubercular bacilli being in the human body, you were all there? *A.*—Yes, sir, we discussed that in a way.

Q.—And as a matter of fact at that time you discussed practically everything that has been testified here? *A.*—I couldn't say that. I know what I have testified. I haven't been in the court before. I don't know what has gone before, but I have said what I have said on this witness stand from my own knowledge of tuberculosis and have made up my mind without any coaching as to what I should say in answer to the questions which have been presented.

Q.—He asked you a question there, you doctors, whether or not the tongue could be depressed with a spoon for the purpose of examining the larynx? *A.*—I don't remember he asked me that direct question.

Q.—He may not have asked you, but the question was discussed? *A.*—You mean before I came to court?

Q.—Yes, prior to the time you came to court? *A.*—No, I don't think that question—

Q.—When you doctors were up there with Mr. Reynolds? *A.*—I don't remember that question was put to me at all before I came into court.

Q.—Now, you doctors were told, were you not, that there had been some evidence that witnesses were going — ambulatory witnesses — to the office of the clinic here from their home for the purpose of taking treatment? A.—Yes, I understood that, I was told.

Q.—That question was asked, and you were told that testimony had been testified to here, that there was two trips a day? You so stated on your direct examination, did you not, Doctor? A.—In my testimony I said if the patient was making trips to a doctor's office the patient was doing something which is contrary to good treatment of active tuberculosis.

Q.—You said two trips a day to a doctor's office. Now, that was discussed, was it? A.—I was informed by some one that that is what happened, since I have been here. Yes, sir, I think I have heard that.

Q.—You were told, were you not, Doctor, of the testimony that was offered here by Dr. Brunson, what he testified to with reference to tuberculosis and his general theory of tuberculosis? A.—I was not told what he testified. I think probably two or three things that were said were presented to me by the attorney, but I got most of my information from reports of the testimony in the newspaper. I have read the paper every day since I have been here.

Q.—Now, you have been here since Monday, you say? A.—Sunday?

Q.—You are stopping at the Hilton? A.—Yes, sir.

Q.—Have you talked to Dr. Fishbein in reference to it? A.—Very little.

Q.—You have talked— A.—I have talked to him. I had breakfast with him this morning.

Q.—He told you how we were proceeding in the case and what was being done here, did he not? A.—He told me some things that had been said, yes, sir.

Q.—I didn't understand you? A.—I say he told me some thing that had transpired here.

Q.—Now, who brought you down here from Oklahoma? A.—I came down on the Rock Island.

Q.—At whose expense? A.—I don't know. I have not discussed my expense. I came at my own expense.

Q.—Are you to be reimbursed for your services in coming down here? A.—Not that I know of.

Q.—You have not discussed that at all? A.—I have not discussed that with anybody.

Q.—Who asked you to come down here. A.—Dr. Olin West of the American Medical Association.

Q.—What is his position with the A. M. A.? A.—I think his official position is Secretary of the American Medical Association.

Q.—When did he request you, Doctor? A.—Oh, I think I heard from him approximately two weeks ago.

Q.—Don't you expect to be reimbursed for the expenditure you are making coming down here? A.—No, I do not.

Q.—You do not? Now, Doctor, you stated, I believe, on direct examination that you had suffered from tuberculosis? A.—Yes, sir.

Q.—Did I understand you correctly? A.—Yes, sir.

Q.—And that was about twenty-five years ago? A.—Approximately that.

Q.—And you are now cured, Doctor? A.—I am clinically cured, yes, sir.

Q.—Now, clinically cured, what do you mean by that? A.—I am well in so far as any symptoms of tuberculosis are concerned, as far as I am able to determine.

Q.—It is inactive? A.—And apparently it is cured because I have been well for I expect twenty-three years anyway. I am not sure that I may not have live tubercle bacilli in my system.

Q.—You stated, I believe, that humans who did not have tuberculosis had tubercle bacilli in their systems, did you not? A.—No, I don't think I made that statement.

Q.—Did you make the statement that you were giving serums to babies and children? A.—No, I did not.

Q.—I have got that mixed up. Now, Doctor, you have been a tuberculosis specialist practically about thirty or thirty-five years? A.—I would say thirty-five years.

Q.—Now, from your experience and observation and knowledge, what is the period of contagion in tuberculosis, Doctor — of incubation? A.—Oh, that is still a problematical question. I remember trying to answer that question. I might give my experience. I was in Hamburger's Clinic in Vienna in 1909, and he was particularly interested at that time in trying to develop a tuberculin test for diagnosis, and he had an infant admitted to the clinic or hospital where he was observing children, with a negative tuberculin test. This infant was, while there, in contact, slight contact, with tuberculosis, and within about two and a half or three weeks the tuberculin test became positive. The incubation period though is still left more or less uncertain and may vary in different individuals.

Q.—And as a matter of fact— A.—Possibly two or three or four weeks.

Q.—As a matter of fact the medical world knows nothing about the period of incubation, isn't that a fact? A.—I do not think that is a fact.

Q.—You do not? Do you think they do know the period of incubation? A.—Approximately.

Q.—What is that period, now, Doctor? A.—Two to four weeks.

Q.—From two to four weeks after being segregated to the disease, or come in contact with it, or what? A.—Two to four weeks after coming in contact with tubercle bacilli the cells of the human organism become sensitive to tuberculin, showing there is reaction and the presence of the tubercle bacillus, and in my opinion when that takes place there is a disease effect from the tubercle bacillus, but the tubercle bacillus may become encapsulated and the individual affected may never manifest progressive pulmonary tuberculosis, or years later from that same infection tuberculosis may develop in clinical form. I think we know a great deal about it. There is a lot we do not know we would like to know.

Q.—You have no specific for the disease, have you? By you I mean the medical man? A.—I explained a while ago in my testimony.

Q.—I am asking you again? A.—We have no medical specific, but with our present knowledge of the treatment, rest approaches a specific, what might be termed a specific measure if it is properly applied at the proper time. And that means not only general rest of the body in bed, but local rest, which may be brought about by several different surgical means, including artificial pneumothorax, which means collapse of the lung by introduction of air. Then the other method is a little more artificial and of such a nature the air space cannot be so readily retraced, but justifiable, because if one measure of choice cannot be applied we resort to another, with the hope of bringing about an ultimate cure through the one principle of rest.

Q.—Rest is the whole thing in the treatment of tuberculosis? A.—I wouldn't say rest is the whole thing.

Q.—What else have you, then, if rest isn't? A.—We have dietetic and hygienic measures which are important, but not effective as a rule without rest.

Q.—State what they are? A.—Good food, three well balanced meals a day, not stuffing, as some doctors have done in the past, and proper hygienic measures, fresh air, light, sunshine, moving air.

Q.—That is all that the medical profession has, they depend on nature in the treatment of tuberculosis? A.—Often we need to give some attention to symptomatic — what we call symptomatic treatment, we give drugs to meet certain indications, perhaps for cough if we think it is indicated, to help patients to rest, to relieve pain, and sometimes tonic measures if the appetite is not good.

Q.—What do you do about the pus in the lungs, you let that be absorbed by the body and go into the various portions of the body? A.—With the treatment which I have described, the patient usually improves and with all of my effort to know what to do for people who have tuberculosis, I know nothing about what you call the pus, and I know of nothing except what we do that would help to control the disease and bring about improvement.

Q.—Isn't there formation of pus in the lungs? A.—Sometimes.

Q.—How do you eliminate that pus from the body, do you permit the body to absorb it or do you eliminate that from the body? A.—I depend on nature for elimination of the secretions that accumulate in the bronchial tree, that is the most natural thing in the world for a human being to eliminate through, the ciliated mucous membrane, with its effect on foreign material and even the secretions which come from mucous membrane, and the reflex which gives rise to cough, when cough is needed to bring up the material, and that is the best method of elimination, because it is a response to nature without the undesirable

stimulation of expectorants. I purposely avoid giving cough mixtures which would stimulate cough, because I prefer my patient to let the lungs rest and cough only when necessary for elimination.

Q.—Then your statement, eliminating and everything, is you permit the pus to be taken care of by nature in the body? *A.*—I wonder if you happen to know that the tubercle bacillus can produce pus?

Q.—What is that? *A.*—I want to know if you know that the tubercle bacillus alone produces pus?

Q.—I haven't any idea. I am not a specialist, and I am asking you the question. *A.*—I apply all of the known and accepted methods of treatment, and so-called elimination of pus takes care of itself under those methods of treatment.

Q.—That is by absorption in the body? *A.*—And it is well known that the best results obtained in the treatment of tuberculosis are obtained through the principles which I have enumerated in my testimony.

Q.—Which is by absorption in the body? *A.*—In my testimony—

Q.—Don't those poisons from the pus pass into the liver, kidneys, heart, affect the heart and other vital organs of the body, is that unusual in tubercular cases? *A.*—I don't know anything about that. I never have seen the effects of it, either clinically or post mortem.

Q.—You don't know whether or not tuberculars are usually and ordinarily sufferers, that is, tuberculars of some length of standing, from kidney trouble, liver trouble, and poisons from the lungs go into the various organs of the body, isn't that a fact? *A.*—Occasionally we see tuberculosis of the kidney; otherwise the kidney seems to remain quite free from disease.

Q.—Does the blood stream ever take up any of these poisons from the pus formed in the lungs and take it into the stomach by swallowing? *A.*—The blood does absorb poisons or toxins, but in tuberculosis the toxins that are absorbed are manufactured by the tubercle bacillus.

Q.—That goes in the blood? *A.*—We think that causes the fever we have in tuberculosis.

Q.—It doesn't come, in your opinion, from the absorption of the pus by the various portions of the body, taken in the stomach, as so many do not expectorating? *A.*—In my opinion it does not come that way. The absorption of the toxins from the tubercle bacillus is chiefly from the closed lesions. After the tubercle ulcerates into the bronchus, the toxic material is eliminated through the bronchial tree and the continuation of the symptoms of toxemia is probably due to tubercles yet unruptured, and the so-called mixed infection or the presence of other bacteria is found because they are normally present in the respiratory tract. We have to remember that the lining membrane of the bronchial tubes and even the air cells is external, from an atmospheric standpoint, and exposed to all of the bacteria and all of the dust in the atmosphere, and germs are constantly in the mouth, nose, throat and even in the trachea, and to some extent in the bronchial tree, and if they are found in purulent sputum that finding constitutes no evidence that those bacteria are the cause of the pus or the cause of the symptoms which arise in the course of tuberculosis, that is external, and probably no absorption from the presence of them.

Q.—Probably no absorption. What becomes of the pus, then, from the lungs? *A.*—It is eliminated through the bronchial tubes and out through the larynx.

Q.—And that that is swallowed by the patients, as is usually done, when there is no means of causing expectoration? *A.*—Sputum is sometimes swallowed, and we teach patients who have reached the age of understanding—we don't often see young children with sputum from tuberculosis—we teach them not to swallow sputum because we think it is not a good thing. We teach them not to cough more than necessary, because coughing might tend to exaggerate the trouble in the lungs and help to localize trouble in the larynx.

Q.—If you teach them not to cough, much of the phlegm stays in the lungs? *A.*—No.

Q.—What becomes of it? *A.*—It travels along the bronchial tree and finally there is a reflex impulse through the irritation of the nerve end, as in the mucous membrane, which prompts the patient to eliminate by coughing. I teach my patients to cough as moderately as possible in order not to agitate the diseased lung.

Q.—That is what you physicians depend on is nature? *A.*—What?

Q.—You depend on nature to eliminate the pus from the body? *A.*—Nature does that better than anything I know of.

Q.—Now, Doctor, in the examination of sputum under the microscope, did it or not show a preponderance of pus germs? *A.*—In answer to that question, I would have to explain, because every case of tuberculosis is an individual problem for the physician, and every specimen of sputum has its individual characteristics, even though tubercle bacilli are present, sometimes there are many different kinds of bacteria, sometimes there are only a few, and really every specimen of sputum from any one given case varies under the microscope. There may be more tubercle bacilli today than tomorrow, they may be present today and absent tomorrow, there may be more of the other bacteria today than tomorrow, and those bacteria may come from the mouth or nose or bronchial tree and not from the tubercle.

Q.—If there is a running sore on the hand or on any part of the body, on the exterior, do you clean the sore off, do you take the pus off, wash it and put a disinfectant on it, or do you leave it to nature to eliminate the pus and heal the sore? *A.*—As a rule, drainage of any superficial inflammatory condition, especially when pus is present, is considered of value; as long as we get that through the bronchial tree, there is already a facility for that sort of thing.

Q.—You clean off an exterior running sore, eliminate the pus? *A.*—Nature tends to eliminate pus even on a superficial sore.

Q.—Then I understand you don't clean it off? *A.*—I use my judgment in treating conditions like that, keep them clean and use whatever I think is best for that, I do the same way in treating the lungs.

Q.—You do keep them clean. Now, an abscess on the body, must that be opened so as to get the pus out and let it run out? *A.*—That is considered the best practice at the proper time; if an abscess forms, ordinarily it is opened because that facilitates healing.

Q.—You don't depend on nature to eliminate the pus, then, you think an abscess should be opened and pus removed? *A.*—If, through the process of nature and the response of the tissues the pus localizes, the inflammatory condition localizes and pus forms, we think it is good practice to lance such an abscess and allow the pus to drain out. When a tubercle opens into the bronchus we have similar drainage of the dead tissue, and possibly the sputum will show tubercle bacilli and other bacteria; but the sputum would show the other bacteria before the tubercle opened.

Q.—Now, I will return to a question I asked you a while ago with reference to depressing the tongue to see the larynx, to see if it is infected. You said you could not do that, it could not be done, did you not, on your direct examination? *A.*—I did not say the tongue could not be depressed. I said with all possible depression of the tongue the larynx could not be inspected without the aid of additional means.

Q.—I will ask you if you have ever done that, if you have ever tried that? *A.*—I have looked into the throat, of course, but I could not see the larynx by depressing the tongue.

Q.—Then you have never tried it? *A.*—I tried to see everything I could.

Q.—I asked you this, Doctor, could you by depressing the tongue see the larynx? *A.*—When I was a medical student I was taught to see the larynx.

Q.—You still have not answered my question. I asked did you ever do that, depress the tongue to see the larynx? *A.*—I depressed the tongue and looked for everything that the human eye could discover by such a means and I never yet have seen the tubercles down in the larynx by such a means.

Q.—And you say then from that experience it could not be done and that is not possible? *A.*—Yes, sir.

Q.—And that no one else can do it if you have not done it? *A.*—I would not speak for everybody else.

Q.—That is what you are saying, Doctor.

***The Court:*—Counsel will not argue with the witness.**

A.—My eye should have about the same scope of vision under such circumstances and conditions as anybody else's.

Q.—Now you spoke of the inhalation method of treatment in response to Mr. Reynolds' question here. Have you ever seen the method of treatment that he was speaking of of inhalation? *A.*—I have seen various methods of inhalation but I have not seen the method which is under discussion in this Court.

RE-DIRECT EXAMINATION

By Mr. Reynolds:

Q.—Doctor, in the case of a running sore or abscess on the exterior of the human body is any treatment of an oily substance such as has been described here indicated for the elimination of pus? *A.*—Not that I know of.

Q.—In the case of inhalation of such an oily substance is it or is it not true, Doctor, that that oily substance itself may cause an irritation which increases expectoration? *A.*—I discussed that in my testimony. I think that is true, it might do that.

Q.—And, Doctor, is it physically possible for the human eye to look around the corner? *A.*—No, not at all.

Q.—Doctor, tell us where the larynx is located in the human body. *A.*—I think for those who are not familiar with anatomy I might say that the larynx can be located by the so-called Adam's apple, and it is a small rectangular organ, made up of cartilages and muscles and contains the vocal cords and it is right behind my finger (indicating). My finger is parallel to my vocal cords. It is immediately in front of the tube which leads to the stomach and immediately behind the breast bone, and normally in the center running vertically from the base of the tongue or bottom of the pharynx to its bifurcation or where the windpipe or trachea divides into what we call the primary bronchi, two in number, one leading to the lung, that is, to one lung, and one to the other.

Q.—Doctor, is it not common knowledge among the medical profession you cannot see the vocal cords with the naked eye, merely by looking into the mouth? *A.*—That is so.

Witness excused.

The following proceedings were had out of the hearing of the jury:

***Mr. Quaid:*—The plaintiff at this time desires to object to the testimony of Dr. Watson, it appearing that the rule was called for at 9:30 Monday morning at the announcement of ready for trial, and the evidence just developed by the defendant through one of its witnesses, Dr. Moorman, is that Dr. Moorman, Dr. Randolph and Dr. Watson met together with the attorneys of the defendant and discussed the testimony in the case and also discussed some of the testimony to be given by such witnesses on the witness stand, same being in violation of the rule invoked in this Court.**

***Mr. Reynolds:*—Your Honor, in the first place it was our understanding that your ruling at that time was that these doctors did not have to be brought in and put under the rule; they have not been in the Court. That meeting occurred Sunday afternoon before the trial of the case and there has been nothing like that since. We will bring the other doctors, call them over from the hotel, if it is the Court's desire. We understood that was not necessary and counsel also had a list of doctors and they were not brought in.**

***The Court:*—The Court announced at the time the rule was invoked that all witnesses then present and in attendance on the Court would be sworn and placed under the rule and that the Court would rely on counsel for the plaintiff and defendant respectively to inform the Court on the arrival at the Court of witnesses they expected to use and they would then be called before the Court and placed under the rule. The Court does not understand that there has been any violation of that ruling by the Court.**

***Mr. Brown:*—I was present at the conference when we consulted about matters before we were called into Court.**

***Mr. Reynolds:*—It has certainly been a misunderstanding with us.**

***The Court:*—In view of the question raised by counsel for the plaintiff, the Court will say that all witnesses you expect to use will be kept out of the court room this afternoon. All witnesses on both sides will be notified to be in attendance on the Court tomorrow morning and sworn and placed under the rule unless there is agreement between counsel to waive it. There may be a difference of opinion on it and the Court will make it arbitrary.**

TESTIMONY OF DR. SAMUEL H. WATSON:
DIRECT EXAMINATION

By Mr. Reynolds:

Samuel H. Watson, Tucson, Ariz., a physician, stated that he had been at Tucson since 1911. He is associated with the Tucson Clinic, a group of physicians to practice medicine. He graduated from Rush Medical College in Chicago in 1899, then went to Iowa and practiced medicine for twelve years in general practice. Then he went to Tucson, as he had tuberculosis. After he recovered his health he decided to limit his work to internal medicine and, living in a health resort like that, a great part of the work is disease of the chest in internal medicine. Nearly every summer he takes at least two months off and makes it his business to call on other men doing work with tuberculosis and in sanatoriums. He is past president of the county medical association, member and past president of the state medical association; member and past president of the Arizona Anti-Tuberculosis Association; member and past director of the National Tuberculosis Association; member of the American Sanatorium Association; member of the American Medical Association, the American College of Physicians, the American Academy of Tuberculosis and the American College of Tuberculosis Physicians, and certified to the American Board of Internal Medicine in internal medicine. He has written articles for publication on tuberculosis in various journals.

Q.—Dr. Watson, are you familiar with the literature and the reports regarding various remedies applicated for the use and treatment of tuberculosis for the past decade or so? *A.*—I am.

Q.—What has been the extent of your study in that regard? *A.*—I do not know just what you mean by that question.

Q.—I was just trying to get at, Doctor, what journals and reports, etc., you rely on for your information. *A.*—I try to read the current medical journals that publish articles on the work of the chest, particularly tuberculosis. As I say, I visit other men doing chest work and try to learn what they are doing.

Q.—Have you been doing all that since you began specializing in this field? *A.*—I have.

Q.—Now, Doctor, is a theory that a treatment for tuberculosis should be aimed at the secondary infection anything new or novel in medical science? *A.*—No, sir.

Q.—What is the history of that? *A.*—The history of that is that tuberculosis — we are talking about pulmonary tuberculosis?

Q.—Yes. *A.*—It is a primary disease of the lungs and until that disease itself — it is the nature of the tuberculosis to ulcerate, to eat, until that disease ulcerates into the bronchial tube, where it is contaminated with the organisms we all always have present; there is no such thing as secondary infection.

Q.—Is the advocation of the use of mineral oil and volatile terpene-like substances anything new or novel in theory regarding the treatment of pulmonary tuberculosis? *A.*—No, sir.

Q.—For how long has that been advocated or when was it advocated in a general way? *A.*—For a long time. I could not state the number of years, but many, many years ago it was suggested and it was tried and then discarded and then before we realized that rest was a cure in tuberculosis it was tried again, I would say, perhaps, the early part of this century, but since then it has been discarded.

Q.—Now, Doctor, assume a substance which is an oily fluid containing approximately 95 per cent mineral oil and 5 per cent volatile terpene-like substances such as eucalyptus, menthol, sometimes known as mint camphor, and other terpene-like substances such as oil of pine and thymol, can you tell us whether or not such a liquid is an irritant to lung tissues? *A.*—It could well be.

Q.—Will you explain why, Doctor? *A.*—Because we have found that oils frequently produce inflammation of the lung, and the inhalation of such a substance with the body of it 95 per cent oil could readily do that.

Q.—Now, Doctor, will you explain to us just exactly how, explain the physiology of the tubercle bacilli becoming active and what happens? *A.*—When one is infected by the tubercle bacilli nature mobilizes her forces and tries to surround the bacilli and protect the body. That makes little nodules, little spheres with the tubercle bacilli in the center and the cells around, trying to limit the disease.

Q.—What happens then, if anything? *A.*—If nature wins the fight, of course the tubercle bacilli are encapsulated and the cell tissues are scarred, making scar tissues, and healing takes place.

Q.—Now, Doctor, is it your opinion that in the treatment of pulmonary tuberculosis the treatment should be aimed at the secondary infection? *A.*—Not at all.

Q.—Why not? *A.*—Because what kills the patient is the most important thing present and that is the original infection of the tubercle bacilli.

Q.—Now, Doctor, what is the accepted treatment for pulmonary tuberculosis now? *A.*—Rest, comprising general and local rest.

Q.—And is there a clinical cure for pulmonary tuberculosis? *A.*—Absolutely, yes.

Q.—Is there a bacteriologic cure? *A.*—That is a question.

Q.—Has there ever been any indication that the administration of any drug would affect the bacteriologic cure? *A.*—Never.

Q.—Or any oil? *A.*—Never.

Q.—Doctor, as far as your own case is concerned you experienced a clinical cure, did you? *A.*—I did.

Q.—How long ago was that? *A.*—I started my cure about twenty-eight years ago.

Q.—Now, Dr. Watson, in connection with pulmonary tuberculosis I will ask you if in your opinion this statement is true or false: "It is the pus germ that does the most harm"? *A.*—No.

Q.—Is it your opinion that this statement is true: There is no patient with tuberculosis that does not have a cough? *A.*—No, sir.

Q.—Why not? *A.*—I would say the most frequent early symptoms of tuberculosis was fatigue rather than cough.

Q.—Is this statement true: There is only one type of tuberculosis? *A.*—No, sir.

Q.—Why it is untrue? *A.*—Because there are several types.

Q.—What are they, what are a few of them? *A.*—Might have a chronic bronchial tuberculosis, might have a miliary tuberculosis, might have a fibroid ulcerative tuberculosis. We are talking about pulmonary tuberculosis.

Q.—Doctor, what do you understand by the term alveoli? *A.*—Alveoli, they are the ultimate air cells of the lung.

Q.—Is this statement true with regard to them: The air cells of the lung are closed on inspiration? *A.*—No, sir.

Q.—Is this statement true: The air cells of the lung are open on expiration? *A.*—No, sir.

Q.—What is the truth in that respect? *A.*—It is just the opposite.

Q.—Doctor, is it true that the larynx opens into the esophagus? *A.*—No, sir.

Q.—Is it true the pharynx opens into the trachea? *A.*—No, sir. The larynx is a part of the respiratory system and opens into the trachea, or windpipe. At the bottom of the pharynx comes the digestive tract, and at the top of the respiratory tract there is a little trap door that when we swallow closes up the opening in it.

Q.—In speaking of it then just the reverse is true, is that correct? *A.*—Correct.

Q.—Doctor, will you tell us the difference between subjective and objective symptoms? *A.*—Well, subjective symptoms would be the symptoms that the patient would tell me about; objective symptoms would be the symptoms that I myself could find.

Q.—In the case of attempting to diagnose tuberculosis, pulmonary tuberculosis, would the things you learn with the stethoscope be a subjective symptom? *A.*—That would be an objective symptom?

Q.—And would the things that might be interpreted from x-rays be a subjective symptom? *A.*—No, sir, that would be objective too.

Q.—Would whatever might be determined from sputum tests be subjective? *A.*—No, sir, that would be objective.

Q.—Now, Doctor, in your opinion is it physically possible to see nodules caused by tuberculosis of the larynx by the simple use of a tongue depressor? *A.*—No, sir.

Q.—Why not? *A.*—It is a long ways down to the lung, and even if you could go much farther down you could not see the tubercles in the lung because the windpipe simply goes into the bronchial tubes. It is impossible.

Q.—Now, Dr. Watson, is it or is it not true that pulmonary tuberculosis may be accompanied by a temperature, body temperature, which is above normal? *A.*—Yes, sir.

Q.—It is true that it may be accompanied by rales in the chest region? *A.*—Yes, sir.

Q.—And is it true that it may be accompanied by an abnormal pulse? *A.*—Yes, sir.

Q.—And is it true that it may be accompanied by a reduced blood pressure? *A.*—Yes, sir.

Q.—Now, Doctor, supposing a patient had all four of those symptoms, does that necessarily mean that he has pulmonary tuberculosis? *A.*—Not at all.

Q.—How many other diseases can you have, offhand, that might give the same indications, the same symptoms I mean? *A.*—Offhand I can't say how many, but there would be any number of diseases that might produce those various symptoms.

Q.—Doctor, in making a diagnosis for pulmonary tuberculosis what, in addition to determining those symptoms, is customarily done? *A.*—Of course the absolute symptom is finding the tubercle bacillus in the sputum.

Q.—And that is done how? *A.*—That is done by collecting sputum that the patient raises and having a competent laboratory technician examine it, and of course an x-ray; often we are pretty sure from the history and of stethoscopic examination, but that is not positive; it has to be checked.

Q.—Doctor, in the use of the stethoscope, will you explain to us just what it is, what is a stethoscope? *A.*—A stethoscope is an instrument for enabling the examiner to concentrate, collect sounds, and better than he can with his own ears, and is commonly used by all physicians who examine the chest.

Q.—Of what does it consist, just describe it? *A.*—It has two ear pieces that fit in your ears, and they come together in a sort of bell shaped arrangement that you can put on the chest and localize the sounds.

Q.—Is there any amplifying mechanism in that at all? *A.*—Not an ordinary stethoscope.

Q.—Just hollow all the way through? *A.*—That is right.

Q.—Is it essential in using a stethoscope that a man have acute hearing? *A.*—Yes, sir.

Q.—Now, Dr. Watson, have you a knowledge as to whether or not inhalation of oils or substances containing terpene-like substances have been tried in the treatment of tuberculosis? *A.*—Yes, sir.

Q.—And, Doctor, assume a treatment for pulmonary tuberculosis consisting of an atomizer, to which is attached an oxygen tank, a pressure gage and the oxygen tank is set between 35 and 40 pounds, that in the atomizer is contained an oily substance or solution composed of 95 per cent mineral oil and 5 per cent volatile terpene-like substances, including eucalyptus and menthol, and also terpene-like substances which have oil of pine and thymol; that the mechanism of administration is to place the tip of the atomizer in the mouth of the patient, and the patient taking ten inhalations twice daily, and each time the oxygen being forced through it produces a vapor from that substance; have you or have you not an opinion as to whether such a treatment might or could be efficacious as to treatment for pulmonary tuberculosis? *A.*—I have such an opinion.

Q.—What is your opinion, Doctor? *A.*—I do not see how it could be efficacious from the standpoint of medication, and I can see why it might be harmful because of the inhalations, if I may explain that, by making the lungs exercise more.

Q.—What do you mean? What is there that makes them exercise more? *A.*—Well, deep inhalations.

Q.—Suppose that treatment were given as an ambulatory treatment or — in other words, the patient coming to and from the office; with that fact in mind have you an opinion as to whether or not such a treatment might or could be dangerous to the patient suffering from pulmonary tuberculosis? *A.*—I have.

Q.—And what is your opinion? *A.*—It would be harmful.

Q.—Will you state why? *A.*—Because the one healing remedy we have for pulmonary tuberculosis is rest. Anything that makes the patient exercise gives more exercise to the lungs, and so it would be harmful.

Q.—Now, Doctor, is there any indication that any of that substance would penetrate the tissues in the lungs? *A.*—None.

Q.—And unless it did penetrate could it have any therapeutic effect? *A.*—None.

Q.—In regard to tuberculosis, Doctor, is it or is it not a fact that all persons have in their body tuberculosis or tubercle bacilli? *A.*—All persons have?

Q.—Yes, all persons have? *A.*—No, all persons do not have.

Mr. Reynolds: That is all. You may examine.

ON CROSS EXAMINATION:

Questions by Mr. Quaid:

Q.—Dr. Watson, when did you get to El Paso this trip? *A.*—Sunday.

Q.—You know Dr. Moorman? *A.*—Yes, sir.

Q.—And you know Dr. Randolph? *A.*—Randolph, I know him.

Q.—You have talked over this case with those doctors, have you not? *A.*—Well, we met with the attorneys on Sunday afternoon, I think it was, and those doctors were present.

Q.—Who else have you talked to since Sunday? *A.*—No one except the attorneys and these doctors. Dr. Hruby, I think you were trying to ask me about.

Q.—Who else have you talked to? I don't believe I understood your answer. Who else have you talked to since Sunday? *A.*—Who else have I talked to since Sunday?

Q.—Yes, sir. *A.*—No one except the attorneys and these doctors.

Q.—Attorneys, and what doctors? *A.*—Dr. Randolph, Dr. Hruby, Dr. Moorman and Dr. Corper.

Q.—Now, were the attorneys present when you doctors were present? *A.*—Yes, sir.

Q.—And that is since Sunday, isn't it? *A.*—Well, we met at a conference on Sunday afternoon. Since that time in trying to pass the time, spend the time, we doctors have been together, and naturally we have been talking about tuberculosis, but not about this particular trial, because we did not know about it.

Q.—When you were together did you talk about this case? *A.*—We did not know anything about this case. We talked about the general subject of tuberculosis.

Q.—Did you talk about inhalation treatment? *A.*—Yes, sir.

Q.—What else did you talk about?

Mr. Reynolds:—I object to that, your Honor.

The Court:—The Court will sustain the objection.

Q.—Have you ever tried the inhalation treatment yourself? *A.*—I never have.

Q.—You never have? *A.*—No, sir.

Q.—Have you ever seen a patient that it was tried on? *A.*—No, sir, I never have.

Q.—Doctor, could you make an absolute diagnosis of tuberculosis on a patient with a stethoscope? *A.*—No, sir.

Q.—You could not? *A.*—No, sir.

Q.—What else would you have to have? *A.*—Well, I would want a careful history first, then I would use my stethoscope, and would want an x-ray, and would want a sputum examination.

Q.—Do you always do that with every pateint? *A.*—Yes, sir, every patient I suspect tuberculosis on.

Q.—That is what I mean. *A.*—Yes, sir.

Q.—You do not treat any patients without having a stethoscopic examination, a sputum test, and what else? *A.*—X-ray and history.

Q.—X-ray and history? *A.*—Correct.

Q.—You do not treat any patients without having those four things? *A.*—That is for tuberculosis. Correct.

Q.—That is what I am talking about. Doctor, isn't eucalyptus oil and menthol a pulmonary antiseptic? *A.*—Antiseptic?

Q.—Antiseptic? *A.*—No, sir, not in my opinion.

Q.—It is not? *A.*—Not in my opinion.

Q.—Not an antiseptic? *A.*—A pulmonary antiseptic?

Q.—Yes? *A.*—No, sir, not in my opinion.

Q.—Is it a bronchial antiseptic? *A.*—Not in my opinion.

Q.—Now, Doctor, you said something about the exercise of the lungs. What do you mean by that, do you mean coughing? *A.*—Well, coughing would be one form of exercise. Of course, I mean anything that makes your lungs breathe in or out, either deeper or faster, anything that would aggravate that.

Q.—Cough would be one thing, would it not? *A.*—A cough would be one thing.

Q.—Have you ever experienced in your practice a situation where your theory was that a certain treatment would not be beneficial, but on actual trial of the treatment the patient improved and was benefited?

Mr. Reynolds:—There is one matter we would like to take up with the Court before court adjourns, but it should be done out of the presence of the jury.

The Court:—Gentlemen of the jury, you will be excused until 9:30 tomorrow morning.

The jury thereupon retired from the court room at 5 p. m., whereupon the following proceedings were had:

Mr. Reynolds:—Your Honor, in regard to proceeding with further testimony there is one witness who is ill and unable to be in court. His testimony is to identify an additional sample of Dr. Brunson's remedy and trace it to a chemist so that we may have a further analysis, not having had any disclosure so far as to what this remedy consists of; and under the circumstances, unless counsel will agree that the sample taken by Mr. McCoy from Mr. Emmett Denton is a true sample we would like to take his deposition tonight, if we may. It will only take a few questions, but he is confined to his bed.

Mr. Quaid:—We would agree to take his deposition tonight.

Mr. Reynolds:—All right, we will make arrangements.

The Court:—With that understanding the deposition may be taken tonight.

Thursday, June 1

DEPOSITION OF FRANK P. O'HARA, DIRECT EXAMINATION

Taken in the county of Erie, N. Y., at Rocky Crest Sanitarium, near Olean, N. Y., March 13, 1939.

Questions by Mr. Burke:

Frank P. O'Hara stated that he is confined in Rocky Crest Sanitarium near Olean, N. Y. He had a conversation June 15, 1938, with Dr. Brunson that pertained to his case, in Dr. Brunson's office.

Q.—And what was said by you and what was said by him? *A.*—I told Dr. Brunson that I would like to break the monotony of being in El Paso by taking a short trip into the interior of Mexico for three or four days but that at the same time I didn't wish to break the treatments and wondered if it would be possible for me to make this trip, taking some of the medicine with me, in order to continue the treatment while I was away. To this he answered that it would be, and that he would have Mrs. Brunson loan me her atomizer to take along with me.

Q.—Did Dr. Brunson at that time or on that day give you a liquid of any kind? *A.*—Yes sir. He gave me what he said was Mrs. Brunson's atomizer containing his medicine and explained to me how to use it and told me that he was giving me that medicine for nothing, when Fishbein would pay a thousand dollars to get it.

Q.—Did he state at that time whether or not the liquid or medicine which he gave you in the atomizer was the same as the medicine which he had been using on you twice a day from the time you came to El Paso? *A.*—He said this is the same medicine as I have been getting, except I would not get the same results from it, inasmuch as there was a difference between taking the formula from an oxygen tank and taking it from a hand atomizer.

Q.—What did you do with the liquid which he gave you at that time? *A.*—I transferred the liquid into a 1 ounce bottle and kept it in my possession at all times until it was finally deposited in a safe deposit vault in the Northern Trust Safe Deposit Company's vaults on La Salle Street in Chicago, Illinois.

. . . . . .

Q.—Did you have a conversation with the doctor at that time? (Referring to afternoon of June 24.) *A.*—I did.

Q.—What did you say to him and what did he say to you? *A.*—Well, he had all this equipment with him, and he told me that he was giving me a month's supply of his medicine, at $60, and that he would allow me a credit of $30 for the unused one-half month for which I had previously paid him. He then told me that the equipment came to $24.89, so I gave him the additional $4.89, together with the $30 for the medicine. As I had not returned Mrs. Brunson's atomizer, I told both Dr. Brunson and Mrs. Brunson I would bring it to their apartment that evening. That evening I returned the atomizer, and Dr. Brunson asked me for the first time since I had arrived in El Paso for my home street address. I gave it to him, and he told me he would like to hear from me from time to time how I was doing and to give him a complete report each month as I continued the medicine. I then left the apartment.

Q.—Describe the equipment that you have mentioned which Dr. Brunson gave to you? *A.*—The equipment turned over to me by Dr. Brunson consisted of two bottles of his formula, and so labeled, one meter to be attached to the oxygen tank, one piece of hose, one shut-off cock, one atomizer jar, one atomizer nozzle.

Q.—Did Dr. Brunson discuss with you in any way at or about that time the kind of oxygen that you were to endeavor to get in Chicago? *A.*—No. He just said medical oxygen; that I could buy it from any drug store.

Q.—In the course of your conversation with Dr. Brunson on June 24, 1938, did he state to you whether or not the liquid which he gave to you in the two bottles was or was not the same liquid which he had been using in giving the treatment to you? *A.*—He told me that it was the same liquid.

Q.—Did he give you the two bottles personally? *A.*—He did.

Q.—What did you do with the two bottles of liquid which you received from Dr. Brunson on June 24, 1938? *A.*—Took them in my traveling bag and brought them back with me to Chicago.

Q.—How soon after the doctor gave you the two bottles of medicine did you leave El Paso? *A.*—He gave them to me the afternoon of June 24, 1938, and I left El Paso at 4:15 in the morning of the 25th of June.

Q.—What form of transportation did you use for the trip between El Paso and Chicago? *A.*—American Air Lines.

Mr. O'Hara then told how he transferred the medicine to Mr. Burke and the chemists.

Q.—State what if anything was said and done there at that time in the office of Dr. Leech. *A.*—Mr. Burke asked me to explain to Dr. Leech the various items that I had brought to his office, which I did; he then called in Dr. Schoeffel and had me tell him the same thing. Dr. Schoeffel then transferred approximately one half of the contents of the 1 ounce bottle into a glass stoppered bottle, to which he attached a sticker and

wrote thereon in his own handwriting the capital letter A, together with his initials. (Mr. O'Hara then described the preparation of the remaining samples.)

Q.—Mr. O'Hara, previous to going to El Paso, Texas, and meeting Dr. Brunson there, what had been your business or occupation? *A.*—I was in the radio manufacturing business.

Q.—How long had you been in that business? *A.*—With various concerns for about ten years.

Q.—Will you tell us, Mr. O'Hara, the names of the concerns with whom you were associated during that period? *A.*—McMillan Radio Corporation, Clago Radio Corporation, Capitol Radio Corporation, Echophone Radio Corporation and Corona Radio & Television Corporation, and Addison Radio & Electric Corporation.

Q.—What was the nature of your connection with these various radio concerns, Mr. O'Hara? *A.*—Either purchasing agent, sales manager, production manager or general manager.

Q.—Are you a family man or a single man? *A.*—Family man.

Q.—You have some children? *A.*—I have two children, a boy and a girl.

Q.—Is your wife living? *A.*—Yes, sir.

***Mr. Quaid:*—I want to first introduce some of the cross interrogatories propounded to the same witness, that is, Frank P. O'Hara.**

Third Cross Interrogatory.—If you answer the foregoing question in the affirmative, then please state the names and addresses of all physicians who diagnosed your case prior to May 9, 1938, stating the nature of their diagnosis with reference to what disease you are suffering from, if any.

***Mr. Harrell:*—If the Court please, I am objecting to that interrogatory for the reason that we haven't attempted in this to bring out anything regarding Mr. O'Hara's treatment by Dr. Brunson, we have simply introduced here testimony by deposition to show the transfer of the liquid, the formula that he obtained from Dr. Brunson, and for no other purpose.**

***The Court:*—Read the question, please. (Question read.) Sustain the objection.**

***Mr. Quaid:*—In the direct, we will offer the following: (Referring to direct examination of same witness.)**

Q.—In the early part of May 1938 did you meet and talk to Dr. Asa Brunson of El Paso, Texas? *A.*—On May 9, 1938, I called on Dr. Brunson at about 10:20 in the morning for the purpose of consulting him with reference to placing myself under his care for the treatment of tuberculosis.

Q.—What did you say to him and what did he say to you at that time? *A.*—I told him that I had heard that he had a treatment for tuberculosis and that I came to see him about it. He took me into his private office and for something over an hour gave me a discourse on his ability to cure the disease, and the number of people that had called on him in worse shape than I was and were cured in a very short time. He asked me no history in regard to my case but at about 11:30 in the morning asked me to remove my shirt and went over me with a stethoscope, and told me that yes, I had tuberculosis, but he was sure that his treatment would help me; that the treatment consisted of an inhalation process that was administered twice a day and that it would cost me $60 for one month, payable in advance. So I paid him the $60, getting a receipt for it, and was given my first treatment by a woman in the office who apparently acted as his assistant, and at the close of the treatment I was told to come back at 3:30 that afternoon for another treatment.

Q.—When did you next go to the office of Dr. Brunson? *A.*—On May 10, which was the following day, and I received the same treatment as I did on May 9. May 9 was Monday.

Q.—That is, do I understand you correctly, that you went twice to the office of Dr. Brunson in El Paso on the 10th of May? *A.*—Twice on each day and every day that I was there, except Sundays.

Q.—Other than the treatment twice each day which you have mentioned, when did you next talk to Dr. Asa Brunson? *A.*—Other than having the Doctor greet me in the morning and afternoon at the times that he was there with "How are you today? You are surely looking fine" I did not have any conversation with Dr. Brunson until May 18, at which time he gave the usual greeting that I was looking fine to which I answered that I could not notice any improvement. He replied "Do not worry. You are coming fine, your color is much better." That was on the 18th of May.

Q.—When did you next see and talk to Dr. Brunson? *A.*—On the morning of the 19th of May, 1938, the doctor gave me the treatment, as Mrs. Brunson, who had replaced the attendant that the Doctor had when I first started taking treatments, was busy painting the cabinet; I was greeted with the usual conversation of "How are you this morning? You are looking fine." I replied that my pulse seemed rather fast. So he felt of it and said he would give me something for it when I came back in the afternoon. At 3:30 that afternoon I took the other treatment and he gave me a small box of pills; he said they were strychnine and to take one before each meal. Inasmuch as I did not have the proper amount of confidence in the Doctor, I did not take the pills. I was charged 20 cents for them, as he claimed to have got them himself from the drug store, and that he always passed his discount on to his patients.

Q.—When did you next see Dr. Brunson? *A.*—On the morning of May 20, 1938.

Q.—Did you have a conversation with him at that time? *A.*—He gave me the treatment that morning.

Q.—Did you have a conversation with him at that time? *A.*—He asked me if I had read the May copy of *Ken.*

Q.—Well, you did have a conversation with him then? *A.*—Yes.

Q.—Tell us what you said to him and what he said to you? *A.*—He asked me if I had read the May copy of *Ken,* in which there was an article—

***Mr. Harrell:*—I object to whether he read the May copy of *Ken;* that has nothing to do with the issues here. As I said before, the only reason why we put in these questions and are making this proof is to connect up this medicine, that is, to show the delivery of the medicine. The promise I made to the Court yesterday was we would connect up this medicine and trace it into Dr. Schoeffel's hands. Now, we have read portions of this deposition for that purpose, we made that showing, and read them for that purpose and no other.**

***Mr. Quaid:*—This is direct examination; they themselves asked the witness.**

***The Court:*—The Court can pass on it better when he sees the answer. (Handed to Court.) The Court sustains the exception.**

***Mr. Quaid:*—Note our exception.**

Q.—When did you next see Dr. Brunson? *A.*—On May 21, 1938, Dr. Brunson gave both the morning and afternoon treatment, and the conversation was rather general, and nothing pertaining to my physical condition or to the treatment was mentioned.

Q.—When did you next see Dr. Brunson? *A.*—On the morning of May 24, 1938.

Q.—Well, did you have a conversation with him at that time? *A.*—Yes.

Q.—What did he say to you and what did you say to him? *A.*—He told me that I was responding to the treatment very well and that it would only be a comparatively short time before I would be able to go back to Chicago a well man. Mrs. Brunson then gave me the treatment.

Q.—When did you next see Dr. Brunson? *A.*—I saw him in his apartment that evening about 7 o'clock.

Q.—Where was his apartment located? *A.*—In the Cortez Hotel.

Q.—When did you next see Dr. Brunson? *A.*—On the morning of May 26, 1938, after Mrs. Brunson had given me the treatment; and when I was leaving the office, the Doctor came in and remarked how well I was looking, and asked what kind of a night I had? I told him a very good one. I asked him if he would recommend a good laxative. He suggested Fleet's Phoso-Soda and fixed me some, which I took in his office. He asked me if I was weighed lately. I told him no. He told me I looked much heavier, but when he put me on the scales I was 1 pound lighter than I was about two weeks before.

Q.—Now, when did you next see Dr. Brunson? *A.*—In the afternoon of May 26, 1938.

Q.—Did you have a conversation with him at that time? *A.*—I did.

Q.—What was said by him and what was said by you? *A.*—As I was leaving the office, the doctor came from his office, slapped me on the back and said I was coming along just fine and asked me if I was coughing as much as I was when I first arrived. To this I answered that I was not coughing as much.

Q.—When did you next see Dr. Brunson? *A.*—In the afternoon of the same day.

Q.—Was that in his office? *A.*—In his office.

Q.—Did you have a conversation with him at that time? *A.*—I did.

Q.—What did you say to him and what did he say to you? *A.*—When I got there he was alone in the office and had me come in and asked me to strip to the waist. He spent about ten minutes going over my chest and back with a stethoscope. He then told me that I was well on the way to becoming a well man; that both of my lungs were in very good shape; that

he was unable to locate a single rale in either lung. He then told me that at sixty days, or possibly less, I could leave him as well a man as I had ever been, and that I would be able to live in any climate and do any kind of work, no matter how hard. From there the conversation drifted to some of the patients that he had cured. He told me there was not a single T. B. doctor in El Paso that he had not taken patients from that they were unable to cure, and that he, Dr. Brunson, cured them.

Q.—Had Dr. Brunson directed you, up to this time, to have any x-ray pictures made in El Paso, Texas? *A.*—He did not; in fact, he told me that they were absolutely unnecessary; that he could tell much more with the stethoscope than most doctors could with all kinds of x-ray pictures.

Q.—Will you continue, please, your conversation with Dr. Brunson concerning the x-rays which you had brought with you to El Paso, Texas? *A.*—When I told him that I still had them, he said that he would drop into my room in the Hotel Cortez, where his apartment was also located, on the night of June 2 and look at them. I waited until 7:40 p. m. in my room, and as he did not come I called him and said that if he wanted me that I would bring the x-rays to his apartment, and at the same time return the books Mrs. Brunson had previously loaned, and he took the x-rays when I arrived at his apartment and appeared to study them for a short while, and said that from what he could see they showed more trouble in the left than in the right lung.

Q.—What was said by you and what was said by him? *A.*—He asked me if he could keep the plates for a few days, that he would like to take them to a laboratory where he could go over them more carefully. The rest of the evening was spent in general conversation until about 9:30, at which time the doctor went out for some ice cream.

Q.—Did you read the letter which she handed to you in the presence of Dr. Brunson?

***Mr. Harrell:*—I am objecting to reading any letters she handed to him. The letter is not identified and certainly couldn't be binding on Dr. Fishbein, a letter some other person had.**

***Mr. Quaid:*—It is a direct interrogatory, question by the defendant himself.**

***The Court:*—Let me see the answer. (Handed to Court.) Sustain the exception.**

Q.—What did he say to you and what did you say to him? *A.*—He told me that he had taken my x-rays over to Dr. Turner's laboratory and that he and Dr. Turner went over them together, and while they showed I had some considerable trouble, that there were no cavities. He then went into a discourse on how unreliable x-ray pictures were. He compared them to having a photo taken, and he further explained that you could have several photos taken from the same pose, and that no two of them would look exactly alike, and that the same was true of x-rays. He said that the only sure way to determine the true condition of the lungs was with a stethoscope.

Q.—What did he say to you and what did you say to him? *A.*—I told Dr. Brunson that my month of treatments were up, and that rather than stay in El Paso another month in all the heat that I felt that I could take the treatment just as well in Chicago. He then went into a lengthy discourse on patients of his who left too soon, and without exception they all died within four to eight months after leaving. I told him that he must have misunderstood me; that I didn't intend to give up the treatment but to only take it in Chicago instead of El Paso. He then told me that that might work out all right but that there would be certain equipment necessary that would cost me not more than $22.50. I told him I would be glad to get anything he suggested and follow any instructions to the letter. He said that before he could recommend that I do that he would like to give me a careful examination in the morning, and that if he found that I was well enough to leave, that he would arrange to get me the equipment, and that was all the conversation.

Q.—What did you say to him and what did he say to you? *A.*—He asked me into his private office, where he had me strip to the waist, and he went over my chest and back with the stethoscope. When he finished, he said "Young man, my advice to you is to stay here and take this treatment for another month. By that time you should be well enough to go back to Chicago. You will not be well enough to go right back to work, but I will get you the necessary equipment and give you enough medicine to last about three months, and at the end of that time there should not be anything that you would not be able to do. I do not want you to get discouraged, because you have improved remarkably since you have been taking the treatment; in fact, your improvement has been better than most of my patients. I would say that your left lung was entirely well right now, and while I do not find any rales in the right lung, I am still a little afraid." I told him how disappointed I was, but that I was down in El Paso to get well, if possible, and that if his advice was to stay, that I would stay.

Q.—What did he say to you and what did you say to him? *A.*—I told him that my conversation with him of that morning had made me feel rather low down by his telling me that it would be necessary to be in El Paso another month. He said that maybe it would not be that long; that he would examine me again in about two weeks, and it was just possible that I might be able to leave then, due to the fact that I was improving so rapidly. He then started telling me about some insurance cases, when a man who was introduced to me as Dr. Young, came in, and I left.

Q.—What did he say to you and what did you say to him at that time? *A.*—I told the doctor again that I knew I could continue to show the same improvement that he maintained I was showing in El Paso, in Chicago, if I could continue to take his treatment back there. He answered this by stating that if I really wanted to get completely well that I should follow his instructions; so I told him he was the doctor, and that I would follow his instructions implicitly.

Q.—When did you have the next conversation with Dr. Brunson? *A.*—In the afternoon of June 11, 1938.

Q.—At his office? *A.*—In his office.

Q.—What was said by him and what was said by you? *A.*—When the doctor was giving me the treatment he said "I understand that you know one of my cured patients." I told him that I didn't know the woman that he referred to, but that I had met her several times only to speak to. He then began a recitation of the condition both this woman (Mrs. Boise) and her husband were in when they came to him, and how he had cured Mrs. Boise in about three months, but that it had taken him about six months to cure her husband. He also told me that Mrs. Boise worked for him for several months after she was well.

***Mr. Quaid:*—We will continue with the cross interrogatories.**

Fourth Cross Interrogatory:—State the sanatoriums, or hospitals, or clinics, where you were confined or treated for the disease from which you are suffering, giving the location of same, and the doctors operating same, and what the doctors told you constituted your physical ailments.

***Mr. Harrell:*—There is an objection to that, Your Honor. The question of treatment here by Dr. Brunson isn't in issue in this particular case, the only purpose in reading the parts of the deposition this morning is to connect up the delivery of this medicine.**

***The Court:*—The Court knows that statment, that statement shows what sanatoriums there were, the sanatoriums will be admitted, but what the doctors told him about the case will not be.**

***Mr. Quaid:*—That part of it is probably not admissible.**

A.—My answer to cross interrogatory 3 covers this question.

***Mr. Quaid:*—That portion of cross interrogatory 3 that tells what sanatoriums he was in, I want to read that.**

A.—In October 1936 the Mayo Clinic;—

***The Court:*—Sustain the exception.**

***Mr. Quaid:*—We except.**

Fifth Cross Interrogatory:—Is it not a fact that both of your lungs, both anterior and posterior, contained rales, both upper and lower lobes? If you say they did not then state specifically what lung and what portions of the lung contained rales.

***Mr. Harrell:*—This is a lay witness; I don't think he is capable of testifying whether his lungs contained rales.**

***The Court:*—Sustain the exception.**

Sixth Cross Interrogatory:—State whether or not your case was diagnosed as chronic active tuberculosis.

***Mr. Harrell:*—We object to that, Your Honor, for the same reasons.**

***The Court:*—The Court will sustain the exception.**

Seventh Cross Interrogatory:—State when you contracted and first became aware of the condition of your lungs.

***Mr. Harrell:*—I am objecting to that for the same reasons.**

***The Court:*—Sustain the exception.**

Eighth Cross Interrogatory:—State if, on May 9, 1938, in addition to lung trouble, you did not experience pain in the stomach and also suffer from nervous indigestion.

***The Court:*—Now, gentlemen, if it is just a number of questions of that type you wish to except to their being offered in evidence and state the grounds of the exception, we can probably dispose of a lot all at one time.**

***Mr. Quaid:*—I believe that is the last one.**

***The Court:*—Sustain the exception.**

Ninth Cross Interrogatory:—State if previous to May 9, 1938, you had visited El Paso and took treatment in any sanatorium in the city of El Paso. If so, give the date, name of the sanatorium, and for what you were treated, and the name of the doctor or doctors who attended you.

***Mr. Harrell:*—I am objecting to that; that still is not an issue here, treatments in any other sanatorium in El Paso.**

***The Court:*—Sustain the exception.**

***Mr. Quaid:*—Note an exception.**

Tenth Cross Interrogatory:—State whether in that sanatorium and under those doctors x-ray pictures were made. If your answer is in the affirmative, state where those pictures are now and state whether or not those pictures were exhibited to Dr. Brunson by you.

***Mr. Harrell:*—Same objection, same reasons.**

***The Court:*—Overrule the objection.**

A.—Those pictures are in my possession and were exhibited to Dr. Brunson by me.

Twelfth Cross Interrogatory:—State whether or not, after returning to Chicago, you immediately felt bad and began to decline. If you answer in the affirmative, then state to whom you made such statement in El Paso.

***Mr. Harrell:*—We are objecting to that, Your Honor, for the same reasons.**

***The Court:*—Let me see the answer. (Handed to Court.) The Court will sustain the exception.**

Fifteenth Cross Interrogatory:—State whether or not, after returning to Chicago, you broke down again and decided to return to El Paso, and whether or not you decided to take the treatment that you had heard condemned while at the El Paso Sanatorium.

***Mr. Harrell:*—Objecting to that, Your Honor.**

***The Court:*—The Court sustains the exception.**

Sixteenth Cross Interrogatory:—State if, after returning to El Paso, you then commenced, on May 9, 1938, to take treatments from Dr. Brunson. *A.*—Yes.

Seventeenth Cross Interrogatory:—If, in answer to the foregoing, you say you did take treatments from Dr. Brunson, then state when you ceased to take the said treatments. *A.*—I ceased to take treatments from Dr. Asa Brunson on June 24, 1938.

Eighteenth Cross Interrogatory:—State whether or not, during the time you were taking treatment from Dr. Brunson, whether you indulged excessively in the use of liquor, and whether or not you indulged in smoking cigarets. If you answer in the affirmative, then state how often and to what extent you so indulged, and whether or not Dr. Brunson advised you on several occasions that you would have to desist in the use of liquor and use of cigarets. *A.*—I indulged in smoking cigarets and did use liquor, but not excessively. At that time I was smoking approximately one package of cigarets a day. My drinking was confined entirely to beer and would run from one to two glasses a day, up to and not exceeding six or seven in any twenty-four hours. Dr. Brunson did mention that he would like to see me cut down on cigarets. He at no time mentioned drinking; in fact, on one occasion, in walking back to the hotel with him, he suggested that we stop in and have a glass of beer, which we did.

Nineteenth Cross Interrogatory:—State whether or not you know Mr. Hausman and state the name of the man of Hebrew descent who stayed at the Cortez Hotel, with whom you associated.

***Mr. Harrell:*—We object to any reference to a man by the name of Hausman. Any testimony regarding Mr. Hausman wouldn't be binding on Dr. Fishbein.**

***The Court:*—The Court will overrule the objection. It is wholly immaterial.**

A.—I know a Mr. Sam Hausman. Mr. S. A. Sandberg stayed at the Cortez Hotel at the time I did, and I associated with him while I was there.

Twentieth Cross Interrogatory.—State whether or not you know Bill Montgomery, whether or not you know Fred Knollenberg, whether or not you know Mrs. Mittie King, and whether or not you know Mr. Herbert Cox of Glendale, California, and whether or not you know Mr. Pundt.

***Mr. Harrell:*—I make the objection for the same reason.**

***The Court:*—It will not be material at all unless the testimony, on further inquiry, seeks to impeach and offer the testimony of these witnesses. It is wholly immaterial. The Court will sustain it on the ground that it is immaterial unless it is connected up in some way and shows wherein it is material.**

***Mr. Quaid:*—I thought Mr. Fred Knollenberg would testify. We put that in the main case; he treated Mr. O'Hara and he did improve.**

***The Court:*—Sustain the objection.**

***Mr. Quaid:*—I will offer the twenty-first, it is the same, and it is excluded.**

***The Court:*—It is understood.**

Twenty-Third Cross Interrogatory:—State whether or not you were x-rayed by Dr. George Turner on June 23, 1938. *A.*—Yes.

Twenty-Fourth Cross Interrogatory:—If, in answer to the foregoing interrogatory, you say you were, is it not a fact that at that time you were told that you were not well, and you were asked and urged to remain here and continue treatment at the clinic, but you stated that you were homesick for your family and wanted to go back to Chicago? State whether or not those are facts.

***Mr. Harrell:*—We object to that; unless something is proved here as to who told him, the question is ambiguous in that respect.**

***The Court:*—Sustain the exception.**

Twenty-Sixth-A Cross Interrogatory:—State whether or not you advised Dr. Brunson that it was imperative for business reasons that you should return to Chicago. *A.*—I did not.

Forty-Seventh Cross Interrogatory:—Is it not a fact that on June 9, 1938, one month after commencing the treatment of Dr. Brunson, you were greatly improved, that your digestion was normal, that you could eat well and satisfactorily, that the stomach pains had disappeared and that your heart was normal? If you state that they were not, give the name and address of the doctor or individual who examined you, stating that this was not a fact.

***Mr. Harrell:*—We object to that, Your Honor.**

***The Court:*—Sustain the exception.**

Forty-Ninth Cross Interrogatory:—Is it not a fact that on May 9, 1938, you weighed 150 pounds, that on June 23, 1938, immediately prior to leaving El Paso, you weighed 158 pounds?

***Mr. Harrell:*—Same objection, same reasons.**

***The Court:*—Overrule the objection.**

A.—On May 9 I weighed 152 pounds, and on June 23 I weighed 158 pounds.

Fifty-First Cross Interrogatory:—Is it not a fact that you obtained greater relief and made greater improvement under the treatment of Dr. Brunson than you did from any other doctor that ever treated you for this particular disease? *A.*—No.

DEPOSITION OF EDWARD M. BURKE, DIRECT EXAMINATION

Taken in Chicago, May 23, 1939.

Mr. Edward M. Burke, Chicago, an attorney at law, a member of the firm of Loesch, Scofield, Loesch & Burke, told of employing Frank O'Hara to obtain the specimens and of the transfer of the specimens to the chemists.

The following cross interrogatories were offered by the plaintiff:

By Mr. Quaid:

First Cross Interrogatory:—State whether you are one of the defendant's attorneys in this cause. *A.*—Yes.

Seventh Cross Interrogatory:—When did you first employ O'Hara to act as a spy for you? *A.*—I will answer the first part of the question, which inquires as to when I employed O'Hara, and say that I employed him in the early part of May 1938. I did not hire him as a spy, but I hired him for the purpose of securing from a doctor, who was administering a secret remedy, a sample or portion of such secret remedy.

***Mr. Quaid:*—The last sentence is not responsive to the question and we do not care to read that.**

***Mr. Harrell:*—I submit it was put in motion by the question.**

***Mr. Quaid:*—It is an adverse witness.**

***The Court:*—The Court sustains the exception.**

Eighth Cross Interrogatory:—How much did you pay O'Hara for his services? State the total amount you paid O'Hara for his services in the Brunson case, including not only his salary but his expenses, and giving a detailed statement of his expenses. *A.*—From the time I employed Frank P. O'Hara, which I think was during the first week of May 1938, until June 30, 1938, I paid him the total sum of $1,361, which included his salary of $10 per day and expenses. I would say that about $600 of that sum was salary and $761 expenses, which expenses would include transportation from Chicago to El Paso and return and the money which he paid to Dr. Brunson for treatment during that period and the apparatus which Dr. Brunson sold to him to enable him to pursue his treatment at home in Chicago, Illinois.

Nineteenth Cross Interrogatory:—You have paid O'Hara for his services and for the depositions that he gave to you in New York. State whether or not you paid for and induced him to make false statements. *A.*—I did not pay him for making false statements and I did not induce him to make false statements. I paid for honest work and true statements and I think I got same.

Twenty-Second Cross Interrogatory:—Is it not a fact that in these cross interrogatories O'Hara admitted that he had gained approximately 8 pounds while in El Paso; that his hemorrhages had ceased; that his temperature had become normal; that he slept well; that he had improved?

***Mr. Harrell:*—I am going to object to that, Your Honor, the deposition of O'Hara would be the best evidence.**

***The Court:*—Sustain the exception.**

Twenty-Third Cross Interrogatory:—Is it not a fact that you had paid him to make the statements contained in the direct interrogatories? *A.*—It is not a fact. I paid him as and for compensation for the time consumed in going over the original letters which he had written to me and to refresh his recollection therefrom and for the time consumed in talking to him the day before the taking of the depositions on direct interrogatories, the time consumed in the submitting of said direct interrogatories to him, the time consumed on the day the written transcript of the direct interrogatories were submitted to him and the time consumed by him in going over said written transcript or the direct interrogatories and his answers thereto, the time consumed in considering the written cross interrogatories which you submitted at a later date and the time consumed by him in answering the written cross interrogatories submitted by you, and the consideration of said cross interrogatories and his answers thereto before the signing of same.

Twenty-Fourth Cross Interrogatory:—In addition to the payment for his per diem while in El Paso, and all of his expenses, state how much you paid O'Hara for answering the depositions you propounded to him? *A.*—I made no division of the amount of money I paid O'Hara as between depositions I propounded to him and the cross interrogatories which you sent later to be propounded to Mr. O'Hara. You sent no sum of money whatever for submitting your cross interrogatories to O'Hara nor for his consideration thereof, nor for his reading the same after they were written up. I paid O'Hara not only for the consideration of my direct interrogatories but also for his consideration of your cross interrogatories. That payment included the day that I went to see him at Rocky Crest Sanitarium near Olean, N. Y., when I submitted to him all of his letters to me and asked him to read and consider them and to refresh his recollection, so that he would be able to give his deposition on the following day. On the following day I again went to the sanatorium with the notary public and we spent about five hours on that day in submitting the direct interrogatories to Mr. O'Hara. After the direct interrogatories had been written up, they were taken to the sanatorium to Mr. O'Hara by a notary public and thereafter the deposition on direct interrogatories was signed by him. After Mr. O'Hara had signed the deposition on direct interrogatories, your cross interrogatories arrived and the notary public took your cross interrogatories to Mr. O'Hara and thereafter the notary public took Mr. O'Hara's answers to your cross interrogatories and transcribed the same on his typewriter and thereafter returned to the sanatorium and secured Mr. O'Hara's signature and oath thereto. The sanatorium is located in the mountains 5 miles from Olean, N. Y. For all of the foregoing services of Mr. O'Hara I paid him the total sum of $100.

Twenty-Eighth Cross Interrogatory:—State where you got the money that you paid O'Hara. *A.*—I paid it from the funds of the law firm of Loesch, Scofield, Loesch & Burke.

Twenty-Ninth Cross Interrogatory:—Is it not a fact that this money was furnished by the A. M. A. to you or that you were refunded for the expenditures you made? *A.*—The money was not furnished by the American Medical Association prior to the time the services were rendered. The services were contracted for by me, in my discretion as the attorney for the defendant in this case and it was afterward billed by the firm of Loesch, Scofield, Loesch & Burke to the American Medical Association and said Association reimbursed the said firm for the expenditures so made.

Thirty-Second Cross Interrogatory:—State how many investigators you have had working on this case, including members of your firm, A. M. A. associates or hired detectives or investigators. Please give the names of these individuals. *A.*—Mr. J. H. McCoy is an investigator employed by the law firm of Loesch, Scofield, Loesch & Burke. He has done some work on this case. Mr. F. P. O'Hara, who was employed by me personally and paid for his services as an investigator by the law firm of Loesch, Scofield, Loesch & Burke. J. H. McCoy and F. P. O'Hara are the only investigators who have worked on this case.

Thirty-Fourth Cross Interrogatory:—Attach said reports hereto and mark same for identification, showing who they contacted.

***Mr. Harrell:*—I am objecting to attaching such reports; they are clearly confidential, privileged in nature.**

***The Court:*—The Court will sustain the exception. These reports are confidential.**

Thirty-Seventh Cross Interrogatory:—State how much was paid those investigators and state what their expense account amounted to, and state fully the states and cities wherein they made investigations, and give the names of the individuals they contacted.

***Mr. Harrell:*—I object to that as immaterial to any issue in this case.**

***The Court:*—The Court will sustain the exception, except as to Frank O'Hara.**

Forty-Second Cross Interrogatory:—Is it not a fact that the said O'Hara either surreptitously or otherwise secured letters or testimonials from Dr. Brunson or his wife and exhibited same to Mr. Brown, in this city, or had same copied and transmitted same to your office. Please attach all such instruments hereto and mark them for identification.

***Mr. Harrell:*—We object to that, Your Honor. I don't see how the witness could possibly know that.**

***The Court:*—He is asking about some specific letters?**

***Mr. Harrell:*—He is asking what Mr. O'Hara did here, that he obtained some letters surreptitiously.**

***The Court:*—Let's see the question and answer. The Court sustains the exception.**

Fiftieth Cross Interrogatory:—Mr. Burke, is it not a fact that the full power and influence and financial ability of the A. M. A. is back of Dr. Fishbein in this fight, and that you are being compensated from the funds of the A. M. A.?

***Mr. Harrell:*—Is there objection to that?**

***Mr. Quaid:*—Yes.**

***Mr. Harrell:*—I will waive the objection.**

A.—Dr. Fishbein is the editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, and the American Medical Association is defraying his expenses in this lawsuit.

Sixty-Seventh Cross Interrogatory:—Also state what remuneration Crebs Beebe is receiving; also, John Doe and Richard Roe. *A.*—They have not testified and will receive no compensation.

Mr. Harrell:—If the Court please, I wish to read some of the cross interrogatories that counsel omitted to read.

Defendant thereupon introduced the following from the cross interrogatories of said witness:

Twenty-Fifth Cross Interrogatory:—Mr. Burke, as a reputable member of the bar, state whether or not you place any confidence in the truth and veracity of a paid hireling who is seeking, in a questionable manner, to obtain information favorable to your case or any other case. *A.*—I placed confidence in the truth and veracity of Frank P. O'Hara. He was paid by me for honest services rendered. He was not and is not a hireling in any sense of the word. He sought in the only way possible to obtain from Dr. Asa Brunson a sample or portion of the liquid which he claims is a treatment for tuberculosis. Dr. Brunson refuses to disclose what his said treatment contains.

***Mr. Quaid:*—Just a moment, Your Honor. I want to object to that portion on the bottom of page 32. I want to object to that on the ground that it is not responsive to the answer—I mean to the question, in the first place, and in the second place it is a matter that is not within the knowledge of Mr. Burke.**

***Mr. Harrell:*—I submit that is the continuation of the answer.**

***Mr. Quaid:*—That portion of the answer is not responsive.**

***Mr. Harrell:*—You raise the question of confidence in the truth of a paid hireling, and he is testifying what he did.**

***The Court:*—The Court will sustain the exception.**

Eighteenth Cross Interrogatory:—State who suggested O'Hara to you as a good stool pigeon to send to El Paso to seek to insinuate himself into the good graces of Dr. Brunson. *A.*—No one suggested Mr. O'Hara to me as a good stool pigeon, nor as a stool pigeon, nor as a pigeon, but the occupation of O'Hara and the position which he held in his lifetime suggested to me

Ninth Cross Interrogatory:—State if previous to May 9, 1938, you had visited El Paso and took treatment in any sanatorium in the city of El Paso. If so, give the date, name of the sanatorium, and for what you were treated, and the name of the doctor or doctors who attended you.

***Mr. Harrell:*—I am objecting to that; that still is not an issue here, treatments in any other sanatorium in El Paso.**

***The Court:*—Sustain the exception.**

***Mr. Quaid:*—Note an exception.**

Tenth Cross Interrogatory:—State whether in that sanatorium and under those doctors x-ray pictures were made. If your answer is in the affirmative, state where those pictures are now and state whether or not those pictures were exhibited to Dr. Brunson by you.

***Mr. Harrell:*—Same objection, same reasons.**

***The Court:*—Overrule the objection.**

A.—Those pictures are in my possession and were exhibited to Dr. Brunson by me.

Twelfth Cross Interrogatory:—State whether or not, after returning to Chicago, you immediately felt bad and began to decline. If you answer in the affirmative, then state to whom you made such statement in El Paso.

***Mr. Harrell:*—We are objecting to that, Your Honor, for the same reasons.**

***The Court:*—Let me see the answer. (Handed to Court.) The Court will sustain the exception.**

Fifteenth Cross Interrogatory:—State whether or not, after returning to Chicago, you broke down again and decided to return to El Paso, and whether or not you decided to take the treatment that you had heard condemned while at the El Paso Sanatorium.

***Mr. Harrell:*—Objecting to that, Your Honor.**

***The Court:*—The Court sustains the exception.**

Sixteenth Cross Interrogatory:—State if, after returning to El Paso, you then commenced, on May 9, 1938, to take treatments from Dr. Brunson. *A.*—Yes.

Seventeenth Cross Interrogatory:—If, in answer to the foregoing, you say you did take treatments from Dr. Brunson, then state when you ceased to take the said treatments. *A.*—I ceased to take treatments from Dr. Asa Brunson on June 24, 1938.

Eighteenth Cross Interrogatory:—State whether or not, during the time you were taking treatment from Dr. Brunson, whether you indulged excessively in the use of liquor, and whether or not you indulged in smoking cigarets. If you answer in the affirmative, then state how often and to what extent you so indulged, and whether or not Dr. Brunson advised you on several occasions that you would have to desist in the use of liquor and use of cigarets. *A.*—I indulged in smoking cigarets and did use liquor, but not excessively. At that time I was smoking approximately one package of cigarets a day. My drinking was confined entirely to beer and would run from one to two glasses a day, up to and not exceeding six or seven in any twenty-four hours. Dr. Brunson did mention that he would like to see me cut down on cigarets. He at no time mentioned drinking; in fact, on one occasion, in walking back to the hotel with him, he suggested that we stop in and have a glass of beer, which we did.

Nineteenth Cross Interrogatory:—State whether or not you know Mr. Hausman and state the name of the man of Hebrew descent who stayed at the Cortez Hotel, with whom you associated.

***Mr. Harrell:*—We object to any reference to a man by the name of Hausman. Any testimony regarding Mr. Hausman wouldn't be binding on Dr. Fishbein.**

***The Court:*—The Court will overrule the objection. It is wholly immaterial.**

A.—I know a Mr. Sam Hausman. Mr. S. A. Sandberg stayed at the Cortez Hotel at the time I did, and I associated with him while I was there.

Twentieth Cross Interrogatory.—State whether or not you know Bill Montgomery, whether or not you know Fred Knollenberg, whether or not you know Mrs. Mittie King, and whether or not you know Mr. Herbert Cox of Glendale, California, and whether or not you know Mr. Pundt.

***Mr. Harrell:*—I make the objection for the same reason.**

***The Court:*—It will not be material at all unless the testimony, on further inquiry, seeks to impeach and offer the testimony of these witnesses. It is wholly immaterial. The Court will sustain it on the ground that it is immaterial unless it is connected up in some way and shows wherein it is material.**

***Mr. Quaid:*—I thought Mr. Fred Knollenberg would testify. We put that in the main case; he treated Mr. O'Hara and he did improve.**

***The Court:*—Sustain the objection.**

***Mr. Quaid:*—I will offer the twenty-first, it is the same, and it is excluded.**

***The Court:*—It is understood.**

Twenty-Third Cross Interrogatory:—State whether or not you were x-rayed by Dr. George Turner on June 23, 1938. *A.*—Yes.

Twenty-Fourth Cross Interrogatory:—If, in answer to the foregoing interrogatory, you say you were, is it not a fact that at that time you were told that you were not well, and you were asked and urged to remain here and continue treatment at the clinic, but you stated that you were homesick for your family and wanted to go back to Chicago? State whether or not those are facts.

***Mr. Harrell:*—We object to that; unless something is proved here as to who told him, the question is ambiguous in that respect.**

***The Court:*—Sustain the exception.**

Twenty-Sixth-A Cross Interrogatory:—State whether or not you advised Dr. Brunson that it was imperative for business reasons that you should return to Chicago. *A.*—I did not.

Forty-Seventh Cross Interrogatory:—Is it not a fact that on June 9, 1938, one month after commencing the treatment of Dr. Brunson, you were greatly improved, that your digestion was normal, that you could eat well and satisfactorily, that the stomach pains had disappeared and that your heart was normal? If you state that they were not, give the name and address of the doctor or individual who examined you, stating that this was not a fact.

***Mr. Harrell:*—We object to that, Your Honor.**

***The Court:*—Sustain the exception.**

Forty-Ninth Cross Interrogatory:—Is it not a fact that on May 9, 1938, you weighed 150 pounds, that on June 23, 1938, immediately prior to leaving El Paso, you weighed 158 pounds?

***Mr. Harrell:*—Same objection, same reasons.**

***The Court:*—Overrule the objection.**

A.—On May 9 I weighed 152 pounds, and on June 23 I weighed 158 pounds.

Fifty-First Cross Interrogatory:—Is it not a fact that you obtained greater relief and made greater improvement under the treatment of Dr. Brunson than you did from any other doctor that ever treated you for this particular disease? *A.*—No.

DEPOSITION OF EDWARD M. BURKE, DIRECT EXAMINATION

Taken in Chicago, May 23, 1939.

Mr. Edward M. Burke, Chicago, an attorney at law, a member of the firm of Loesch, Scofield, Loesch & Burke, told of employing Frank O'Hara to obtain the specimens and of the transfer of the specimens to the chemists.

The following cross interrogatories were offered by the plaintiff:

By Mr. Quaid:

First Cross Interrogatory:—State whether you are one of the defendant's attorneys in this cause. *A.*—Yes.

Seventh Cross Interrogatory:—When did you first employ O'Hara to act as a spy for you? *A.*—I will answer the first part of the question, which inquires as to when I employed O'Hara, and say that I employed him in the early part of May 1938. I did not hire him as a spy, but I hired him for the purpose of securing from a doctor, who was administering a secret remedy, a sample or portion of such secret remedy.

***Mr. Quaid:*—The last sentence is not responsive to the question and we do not care to read that.**

***Mr. Harrell:*—I submit it was put in motion by the question.**

***Mr. Quaid:*—It is an adverse witness.**

***The Court:*—The Court sustains the exception.**

Eighth Cross Interrogatory:—How much did you pay O'Hara for his services? State the total amount you paid O'Hara for his services in the Brunson case, including not only his salary but his expenses, and giving a detailed statement of his expenses. *A.*—From the time I employed Frank P. O'Hara, which I think was during the first week of May 1938, until June 30, 1938, I paid him the total sum of $1,361, which included his salary of $10 per day and expenses. I would say that about $600 of that sum was salary and $761 expenses, which expenses would include transportation from Chicago to El Paso and return and the money which he paid to Dr. Brunson for treatment during that period and the apparatus which Dr. Brunson sold to him to enable him to pursue his treatment at home in Chicago, Illinois.

Nineteenth Cross Interrogatory:—You have paid O'Hara for his services and for the depositions that he gave to you in New York. State whether or not you paid for and induced him to make false statements. *A.*—I did not pay him for making false statements and I did not induce him to make false statements. I paid for honest work and true statements and I think I got same.

Twenty-Second Cross Interrogatory:—Is it not a fact that in these cross interrogatories O'Hara admitted that he had gained approximately 8 pounds while in El Paso; that his hemorrhages had ceased; that his temperature had become normal; that he slept well; that he had improved?

***Mr. Harrell:*—I am going to object to that, Your Honor, the deposition of O'Hara would be the best evidence.**

***The Court:*—Sustain the exception.**

Twenty-Third Cross Interrogatory:—Is it not a fact that you had paid him to make the statements contained in the direct interrogatories? *A.*—It is not a fact. I paid him as and for compensation for the time consumed in going over the original letters which he had written to me and to refresh his recollection therefrom and for the time consumed in talking to him the day before the taking of the depositions on direct interrogatories, the time consumed in the submitting of said direct interrogatories to him, the time consumed on the day the written transcript of the direct interrogatories were submitted to him and the time consumed by him in going over said written transcript or the direct interrogatories and his answers thereto, the time consumed in considering the written cross interrogatories which you submitted at a later date and the time consumed by him in answering the written cross interrogatories submitted by you, and the consideration of said cross interrogatories and his answers thereto before the signing of same.

Twenty-Fourth Cross Interrogatory:—In addition to the payment for his per diem while in El Paso, and all of his expenses, state how much you paid O'Hara for answering the depositions you propounded to him? *A.*—I made no division of the amount of money I paid O'Hara as between depositions I propounded to him and the cross interrogatories which you sent later to be propounded to Mr. O'Hara. You sent no sum of money whatever for submitting your cross interrogatories to O'Hara nor for his consideration thereof, nor for his reading the same after they were written up. I paid O'Hara not only for the consideration of my direct interrogatories but also for his consideration of your cross interrogatories. That payment included the day that I went to see him at Rocky Crest Sanitarium near Olean, N. Y., when I submitted to him all of his letters to me and asked him to read and consider them and to refresh his recollection, so that he would be able to give his deposition on the following day. On the following day I again went to the sanatorium with the notary public and we spent about five hours on that day in submitting the direct interrogatories to Mr. O'Hara. After the direct interrogatories had been written up, they were taken to the sanatorium to Mr. O'Hara by a notary public and thereafter the deposition on direct interrogatories was signed by him. After Mr. O'Hara had signed the deposition on direct interrogatories, your cross interrogatories arrived and the notary public took your cross interrogatories to Mr. O'Hara and thereafter the notary public took Mr. O'Hara's answers to your cross interrogatories and transcribed the same on his typewriter and thereafter returned to the sanatorium and secured Mr. O'Hara's signature and oath thereto. The sanatorium is located in the mountains 5 miles from Olean, N. Y. For all of the foregoing services of Mr. O'Hara I paid him the total sum of $100.

Twenty-Eighth Cross Interrogatory:—State where you got the money that you paid O'Hara. *A.*—I paid it from the funds of the law firm of Loesch, Scofield, Loesch & Burke.

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Thirty-Fourth Cross Interrogatory:—Attach said reports hereto and mark same for identification, showing who they contacted.

***Mr. Harrell:*—I am objecting to attaching such reports; they are clearly confidential, privileged in nature.**

***The Court:*—The Court will sustain the exception. These reports are confidential.**

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***The Court:*—He is asking about some specific letters?**

***Mr. Harrell:*—He is asking what Mr. O'Hara did here, that he obtained some letters surreptitiously.**

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***Mr. Quaid:*—Yes.**

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A.—Dr. Fishbein is the editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, and the American Medical Association is defraying his expenses in this lawsuit.

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***Mr. Quaid:*—Just a moment, Your Honor. I want to object to that portion on the bottom of page 32. I want to object to that on the ground that it is not responsive to the answer—I mean to the question, in the first place, and in the second place it is a matter that is not within the knowledge of Mr. Burke.**

***Mr. Harrell:*—I submit that is the continuation of the answer.**

***Mr. Quaid:*—That portion of the answer is not responsive.**

***Mr. Harrell:*—You raise the question of confidence in the truth of a paid hireling, and he is testifying what he did.**

***The Court:*—The Court will sustain the exception.**

Eighteenth Cross Interrogatory:—State who suggested O'Hara to you as a good stool pigeon to send to El Paso to seek to insinuate himself into the good graces of Dr. Brunson. *A.*—No one suggested Mr. O'Hara to me as a good stool pigeon, nor as a stool pigeon, nor as a pigeon, but the occupation of O'Hara and the position which he held in his lifetime suggested to me

that he would be a high class, honest man. I did not send O'Hara to El Paso to insinuate himself into the good graces of Dr. Brunson—

***Mr. Quaid:*—We object to that part. That part is responsive, and the rest of the answer is not responsive. He has answered it, he said he did not send him except because he thought he would do him a good job. That is all right.**

***The Court:*—The Court will sustain the exception to that portion of the answer.**

Twenty-Sixth Cross Interrogatory:—Is it your practice to hire questionable individuals and pay them to testify for you in your cases? *A.*—Heretofore I have never found it necessary to hire an individual, questionable or otherwise, to determine from a physician and surgeon the ingredients or the contents of a remedy which he was administering. This is the first time that I have ever found it necessary to do so. The physicians and surgeons that I have encountered have always been ready and willing to state the contents of any treatment which they were administering to human beings. I do not consider Frank P. O'Hara a questionable individual. I did not pay him to testify in the case. I paid him for the investigation which he conducted for me and I paid him a reasonable sum for his time in conducting the investigation for me and a reasonable sum for his time consumed in submitting to questions and in making answers in his deposition on direct and in submitting your questions and in making his answers on your cross interrogatories in said deposition.

Sixtieth Cross Interrogatory:—State why they were delivered to you, the man who had paid presumably to secure them in an unfair and unethical manner, and also the man who is defending this case and seeking to show the contents thereof as being dangerous or detrimental. *A.*—I do not consider that they were secured in an unfair or unethical manner. I know of no other method or manner of securing from a physician and surgeon a secret remedy for tuberculosis or any other disease. As to the reason why they were secured in the manner indicated, I say to you that it was because I wanted to secure an analysis thereof and determine the contents and the ingredients of this secret alleged remedy. The said remedy is secret because to date Dr. Asa Brunson has refused to reveal even to the Court in this case the contents or ingredients of said secret remedy.

TESTIMONY OF DR. LLOYD ERVIN HARRIS
ON DIRECT EXAMINATION

Questions by Mr. Harrell:

Dr. Lloyd Ervin Harris stated that he lives in Norman, Okla., and was born near Ryan, Indian Territory, in September 1900. He is professor of chemistry in the University of Oklahoma. He went to the University of Oklahoma, where he received four degrees, the degrees of pharmaceutical graduate in 1920 and the degree of pharmaceutical chemistry and bachelor of science of pharmacy in 1922. He then did graduate work, receiving a master of science degree in chemistry with botany minor in 1924. In February 1925 he went to the University of Wisconsin and in August 1926 received a doctor of philosophy degree. He wrote a thesis for his master's degree at the University of Oklahoma in 1924. The subject of that thesis was the analysis of a number of remedies that were used in the treatment of dog distemper. In 1926 he was the author of a thesis on phytochemistry, which means chemistry of Bixa orellana. A part of that was published in the form of a monograph by the University of Wisconsin. He is a member of the Sigma Xi which is a graduate scientific society; member of the American Pharmaceutical Association; member of the Oklahoma State Pharmaceutical Association, and other organizations of similar character, also a member of the Committee of Revision of the United States Pharmacopeia.

Q.—Doctor, in your work have you ever analyzed medicines? *A.*—I am frequently called on to analyze medicines of various kinds.

Q.—Doctor, now I am calling your attention to May 13, 1939. Did you meet a gentleman by the name of Mr. E. M. Burke in Chicago? *A.*—I met a gentleman who told me his name was E. M. Burke, and I have every reason to believe it was he.

[Dr. Harris then told how he received the specimens of the Brunson material.]

Q.—What did you do with the medicines after you returned to Norman, Oklahoma? *A.*—At the first opportunity I took the medicines and in a characteristic pharmaceutical fashion I looked at them again. Then I opened them, opened one of them and smelled it, observing what I could from the sense of smell. The next thing I did was to take a clean stirring rod and take a drop of it and put it on the tip of my tongue and observed the taste and effect on the tip of the tongue and toward the back of the tongue as it worked in that direction. Then I made certain physical measurements. I determined the weight of it as compared to water at room temperature. I then determined its index of refraction, then continued with a little more detailed analysis. From the sense of smell and the sense of taste I could detect that there was something in it, in the medicine that would be volatile.

Q.—Would be what? *A.*—Volatile.

Q.—What does that mean? *A.*—Volatile means that it goes up into the air in the form of a gas. The solubility of medicines frequently gives you a very important clue. I found that this medicine was practically insoluble or insoluble in water.

Q.—What do you mean by insoluble? *A.*—Insoluble means that it will not mix with it to form a clear solution. I then decided that steam distillation—

Q.—What do you mean by that? *A.*—By taking a flask and putting water into it, under which a fire may be placed and causing the water to be changed into steam. This steam then was conducted through a small portion of the medicine, causing these volatile ingredients to which I referred a moment ago to go over into the volatile condition. They were then recondensed into liquid form by means of a condenser which was water jacketed to cool it. This was done in a series of steps. The first fraction I collected about 6 or 8 cc., about two tablespoonfuls of water on which floated some oily-like material having a very characteristic odor. The second fraction I collected 1 fluidounce of water on which floated a small quantity of insoluble material that was oily in character and had a slightly different odor. The third fraction, which was also collected in the amount of 1 fluidounce of water, was practically odorless. There was some slight trace of odor, but that was all. That left then in the flask the nonvolatile portion, which, on examination by the sense of smell and sense of taste, was shown to have been deprived of those ingredients that had taste and smell.

Q.—Now, does that in a general way complete your analyses, Doctor? *A.*—No, sir. From there I had to make some specific chemical tests. In order that I might determine a little bit more thoroughly the nature of the material with which I was working I put some of it in a small distilling flask and heated it directly. This started to boil at a temperature of, in centigrade, about 170, the temperature, the thermometer, continued to rise; after a few drops of the material had come over the thermometer went up rather hurriedly to a temperature of approximately 330 degrees centigrade. For the information of those who are not familiar with degrees centigrade may I offer this information: That the boiling point of water is 100 degrees centigrade as compared to approximately 212 degrees Fahrenheit. So to get degrees centigrade to Fahrenheit you have to make a definite correction. That correction is multiplying by 1.8 then adding 32 to your result. After I had done this I determined the index of refraction of the portion that was nonvolatile from the steam distillation. I also determined its solubility or insolubility in various solvents and carried out certain chemical tests to find out the nature of the material, likewise the ingredients that were floating on the portion that had been brought over by the steam; I made certain chemical tests on that.

Q.—When did you complete your analysis? *A.*—The analysis was completed on Wednesday a week ago; a week ago last Wednesday.

Q.—Was the liquid or medicine that you were analyzing the same medicine that you received from Mr. Burke on May 13 of this year? *A.*—Yes, sir.

Q.—What did your analysis disclose? *A.*—The analysis showed that it was about 95 per cent light liquid petrolatum, commonly known as light mineral oil, sometimes known as light liquid albolene; about 5 per cent—that is approximately now—of the ingredients that were volatile.

Q.—Of what, Doctor? *A.*—About 5 per cent of the ingredients that were volatile that had come over in steam distillation. This showed principally to be cineol, which is also known as eucalyptol. That was very definitely shown to be in the first fraction by sense of smell, taste and chemical test. In the second fraction there was very definitely a peppermint-like odor. This was shown to be menthol. There was a trace of turpentine or terpene-like odor, which I did not identify. However, oil of eucalyptus on aging develops this odor, so I am not in a position to say whether this was added in another form or in the form of oil of eucalyptus.

Q.—Now, Doctor, to sum up in just a few words, what did this medicine contain, give us the percentages of same? *A.*—

Mineral oil approximately 95 per cent, oil of eucalyptus — in my best judgment it was oil of eucalyptus — about 3½ per cent — that could vary just a little bit either way, and a small quantity of menthol, not to exceed 1 per cent, and possible traces of other ingredients.

ON CROSS EXAMINATION

Questions by Judge Sweeney:

Q.—Doctor, when did you arrive in El Paso? *A.*—Monday morning, this last Monday morning.

Q.—You have been here ever since then? *A.*—Yes, sir.

Q.—Have you discussed this case with any one, or the testimony that you were to give in this case? *A.*—I discussed it with the attorneys, yes, sir.

Q.—With any one else? *A.*—I talked in a general way with other people.

[The cross examination brought out that Dr. Harris knew in a general way what had been found by Drs. Schoeffel and Muehlberger.]

Q.—You are to be reimbursed for whatever expense you have been put to? *A.*—Yes, sir.

Q.—And you are to be paid for your analysis? *A.*—I expect to be.

Q.—You expect to be? Are you connected in any way with the A. M. A., Doctor? *A.*—I am not.

DEPOSITION OF EMMETT I. DENTON

Taken in El Paso County, Texas, on May 31, 1939.

Mr. Emmett I. Denton testified that he had been acquainted with Dr. Asa Brunson since 1929.

Q.—Did he ever give you any medicine or remedy? *A.*—He never did give it to me himself.

Q.—Who gave it to you? *A.*—His girl in the office, the office girl.

Q.—Do you know how she happened to give it to you? *A.*—He had a large oxygen tank with a hose about this long and an atomizer and put it in my mouth and gave me ten or twelve sprays and told me to breathe it deep.

Q.—Did he ever give you a bottle of his medicine? *A.*—Yes, sir.

Q.—What did Dr. Brunson give you? *A.*—I don't know what it was.

Q.—It was a bottle of medicine? *A.*—A bottle of medicine, no label on it.

Q.—About what size bottle of medicine? *A.*—Oh, I think it was about as big as that there (referring to bottle), about a 3 ounce bottle.

Q.—Now, just state what, if anything, Dr. Brunson gave you. *A.*—Well, I couldn't say what it was, it was just a treatment for tuberculosis.

Q.—Was it a liquid in a bottle? *A.*—Yes, sir.

Q.—What did you do with that? *A.*—I took it home and used it for a spray down my throat twice a day.

Q.—Did you ever give it to any one? *A.*—Yes, sir.

Q.—If so, to whom did you give it? *A.*—I gave it to a girl called Sadie Hayes.

Q.—I will ask you whether or not you gave Sadie Hayes the same medicine or liquid that Dr. Brunson gave you? *A.*—Yes, sir.

CROSS EXAMINATION

By Mr. Quaid:

Q.—How much did you have left when you gave Sadie Hayes that medicine? *A.*—Well, I had almost — I don't know if it was a bottle that size (referring to bottle), it was a full bottle, and an atomizer I had was full also.

TESTIMONY OF SADIE HAYES ON DIRECT EXAMINATION

Sadie Hayes, Hotel Vogel, El Paso, came for her health and has been working for the WPA for about three months. She is acquainted with Mr. J. H. McCoy and with Dr. Felix Miller.

Q.—Do you remember a gentleman by the name of Emmett I. Denton? *A.*—Yes.

Q.—Did you ever at any time last year receive any article from this man Denton, Emmett I. Denton? *A.*—Yes, I received a bottle of a liquid which he received from Dr. Brunson for treatment.

Q.—Did he tell you from whom he received it? *A.*—Yes.

Q.—What did you do with that bottle? *A.*—I gave it to Dr. Felix Miller.

ON CROSS EXAMINATION

Questions by Mr. Quaid:

Q.—Miss Hayes, how long had you known Mr. Denton? *A.*—Oh, for possibly two years.

Q.—Who approached you and asked you to get this medicine from Mr. Denton? *A.*—Well, I had heard about Mr. Denton, the treatment, the results of the treatment, and I had talked about it to Dr. Miller, and then one day he asked me if I had any of this medicine or if this man had any, and this man volunteered to give it to me.

TESTIMONY OF J. H. MC COY ON DIRECT EXAMINATION

Questions by Mr. Brown:

James H. McCoy, Chicago, Illinois, testified that he was acquainted with Emmett I. Denton and Sadie Hayes.

Q.—Where did you first meet Mr. Denton? *A.*—I met him in the Sellers Sanatorium last August, some time last year.

Q.—Where did you first meet the witness who just left the stand, Sadie Hayes? *A.*—Dr. Miller's office.

Q.—When was that? *A.*—That was around August 15 or 16 of last year, 1938.

Q.—What occurred at that meeting in Dr. Miller's office? *A.*—Dr. Miller called me at the hotel and told me he had gotten medicine of Dr. Brunson's, if I would come up there, and I went up there and he was there and showed me a bottle and told me he was going to seal it and tape it up and everything and put his initials on it, and the date, which he did, and he handed it over to me either August 15 or 16.

Q.—Who was present on that occasion? *A.*—Miss Hayes, Dr. Miller and myself.

Q.—What did you do with the bottle? *A.*—I took that bottle with me to Chicago and I put it in the vault up there in our office under lock and key in the drawer I have up there, until May 17 when I took it over to Dr. Muehlberger at the Cook County Hospital, and I turned it over to him.

Q.—Did you turn over to Dr. Muehlberger the same bottle and the same contents you had received from Dr. Miller in the presence of Sadie Hayes? *A.*—Yes, sir.

ON CROSS EXAMINATION

Questions by Judge Sweeney:

Q.—You have been pretty much over the United States in the investigation of this case, have you not? *A.*—I have — not on this case, no.

Q.—Where have you been in reference to this case? *A.*—This case? Missouri, Arkansas and Texas. I guess I was up to New Mexico too, Albuquerque.

Q.—Louisiana? *A.*—No, I didn't get time to go down there. Oh, yes, I was, I was at the town of Cotton Valley, Louisiana, last year.

Q.—Cotton Valley? *A.*—Yes, that is right, something like that.

Q.—In your trips through Missouri, Arkansas, Texas, New Mexico and Louisiana you met quite a number of Dr. Brunson's former patients, did you not? *A.*—Yes, sir.

***Mr. Brown:*—We object to those matters we have not gone into, we have not gone into those matters, and if they want to make him their witness in chief they may do so later on.**

***The Court:*—The Court sustains the objection.**

***Judge Sweeney:*—I have not asked anything, it was in anticipation, I just want to ask him the question had he met them.**

***The Court:*—Whether he saw them or did not meet them would be immaterial.**

Q.—Now, Mr. McCoy, have you got the letters that Mr. Burke was asked to attach as exhibits to his deposition which he stated — you were in the court room and you heard the depositions?

***Mr. Brown:*—Your Honor please, we object to that, it is immaterial and irrelevant.**

***The Court:*—As to whether he has them or not, I will let him answer that question. If you are seeking to introduce them that would be material. That question was inquired about this morning, and it was stated he would be put on the stand. I will permit him to answer this question.**

Q.—Do you have the letters with you? *A.*—Not with me, no, sir.

Q.—And you were not asked to bring them to El Paso? *A.*—No, sir.

(To be continued)

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SATURDAY, JULY 15, 1939

GAS GANGRENE IN CIVIL LIFE

The death rate from gas gangrene is still appallingly high. The mortality rate of gas gangrene in civil life has been estimated by Millar[1] and by Eliason[2] and his co-workers. Millar collected 607 cases occurring in civil life from the beginning of the "post-Lister" period to 1930. The mortality rate in this series was 49.7 per cent, while the mortality from the same infection of the American Expeditionary Forces in France was 48.52 per cent. Eliason and his co-workers collected 349 cases reported from 1930 to 1936. In a group of cases in which gas gangrene developed after amputation for arteriosclerotic or diabetic gangrene the mortality was particularly high, 59 per cent for the entire group and 75 per cent for the diabetic. In a group of cases following surgical procedures other than amputations, the mortality was 41 per cent when serum was used and 76 per cent for cases in which serum was not used. The mortality in 109 cases reported by Callander[3] and his co-workers was 51 per cent. Because the prognosis of this dreaded infection depends largely, if not entirely, on early recognition and prompt treatment, the lessons learned during the World War need to be emphasized as well as the advances of the postwar period. Two notions appear to be largely responsible for the lack of awareness of gas gangrene by physicians: gas gangrene is rare in peace time and it always presents itself in its typical grave form.

Recent pathologic studies have established that gas gangrene is caused almost exclusively by anaerobic bacilli. As a rule, a number of anaerobes are found associated in symbiosis with aerobic organisms such as streptococci or the staphylococci. No one anaerobe can be said to be responsible for the infection. The toxins produced by aerobic organisms create within the tissues conditions favorable to the growth and pathogenic action of the anaerobes. The clostridia cultured from cases of gas gangrene in order of their frequency are Clostridium welchii (Bacillus aerogenes capsulatus; B. perfringens) in from 80 to 100 per cent of the cases, Clostridium oedematis maligni (vibrion septique of Pasteur), Clostridium novyi (oedematiens), Clostridium sordelli and Clostridium histolyticum. The anaerobes inhabit the soil and the alimentary tract of man and animals, dairy products and clothing. Research indicates that Clostridium welchii is ubiquitous. However, most of these strains are not pathogenic. These organisms give rise to exotoxins which act as aggressins. In the presence of such exotoxins the clostridia take on a virulent pathogenic character and rapidly lead to gangrene and death. Deeply lacerated, contused soiled wounds, compound fractures, hematoma and interference with the blood supply create favorable conditions for the growth of anaerobes. Callander lists, as varieties of trauma which predispose to gas gangrene, crushing and lacerating accidents, particularly compound fractures, where street and farm dirt rich in anaerobes gains access to injured tissues, particularly muscles; gunshot wounds and other punctured wounds into which anaerobes are introduced by contaminated missiles, mud, gravel and bits of cloth, and injuries to the gluteal and peroneal regions where fecal contamination readily occurs. Furthermore, abortions and instrumental delivery occasionally have caused gas gangrene of the uterus, hypodermic or intramuscular injections have occasionally been followed by gas gangrene, and gas gangrene may follow clean surgery, particularly amputations for arteriosclerotic or diabetic gangrene.

The symptoms include pain at the site of the wound, mounting fever and acceleration of the pulse, followed by constitutional symptoms of grave intoxication such as stupor, coma and delirium. The local signs are those of a rapidly increasing swelling, a serous or serosanguineous discharge, a mottled discoloration of the skin, crepitation of the tissues, escape of gas bubbles when the edges of the wound are spread and the characteristic odor. Early x-ray examination is capable of demonstrating gas in the depth of the tissues long before it can be elicited by palpitation or percussion.

Prophylaxis implies a certain amount of awareness and early recourse to x-ray examination and to smears and cultures from the depth of the wound in suspected cases. The question of what lesions to treat by the method of débridement and the administration of antiserums must be left to the experience and the judgment of the surgeon. The use of serum both as prophylactic and as curative therapy, while still in an experimental state, is definitely indicated. Thus the statistics of Eliason and his co-workers show a mortality rate of 25 per cent in cases treated with serum as compared with 49 per cent in cases not so treated. Bates[4] showed a reduction from 50 per cent to 18 per cent with the use

1. Millar, W. M.: Gas Gangrene in Civil Life, Surg., Gynec. & Obst. **44**: 232 (Feb.) 1932.
2. Eliason, E. L.; Erb, W. H., and Gilbert, P. D.: Clostridium Welchii and Associated Organisms, Surg., Gynec. & Obst. **64**: 1005 (June) 1937.
3. Callander, C. L.; Haim, Arthur, and Maximov, Alexis: Gas Gangrene: An Analysis of 109 Cases Encountered in Civil Practice, Am. J. Surg. **42**: 811 (Dec.) 1938.
4. Bates, M. T.: Gas Gangrene: A Review of Thirty-Two Cases With Special Reference to the Use of Serum, Both Prophylactic and Therapeutic, Ann. Surg. **105**: 257 (Feb.) 1937.

of serum. Kelly[5] and his co-workers are enthusiastic over the results of roentgen treatment of gas gangrene. They report 143 cases treated by them and others since 1928 with results which far surpass those obtained with serums, débridement and amputations. They are inclined to regard roentgen therapy in gas gangrene as a specific and state that, if it is employed during the first twenty-four hours, recovery will occur in all cases. The discussion would not be complete without mention of sulfanilamide. However, judgment as to the efficacy of sulfanilamide and of roentgen therapy must be suspended until further experience.

NON-PERUVIAN VERRUGA

Carrión's disease is also known under the names of verruga peruana (chronic stage) and Oroya fever (acute stage). The identity of the two conditions (verruga and fever) was dramatically demonstrated by Carrión in 1885 and confirmed afterward by various workers, among them Noguchi, and by Rebagliati and Gastiaburu. Barton found the causative agent in 1909, which Strong and the Harvard commission named Bartonella bacilliformis in his honor in 1913. Battistini and Noguchi later grew this organism in cultures.

Because of a number of peculiarities, the two stages (verruga and fever) have long attracted international attention; American scientists have been prominently identified with researches into their etiology and transmission. Only a few months ago a Harvard University commission returned from a field study of the disease in Peru. One point usually emphasized is the geographic limitation of the condition; until recently it was definitely identified only in the rather sharply defined Andean area (narrow valleys on the western slopes, latitude from 8 to 13 south, altitude from 1,000 to 12,000 feet) from which it gets its name—Oroya, Peru. It has never been contracted in the lower coast region or reported from the eastern side of the Andes. Occasionally, as may be seen from textbooks on tropical diseases, there have been unverified reports as to the presence of verruga peruana in similar areas of neighboring countries, as Bolivia, Chile and Ecuador. Some have identified as verruga the disease attacking Pizarro's soldiers in 1531 at Coaque, Ecuador, although this was later discredited. Mendoza reported in 1905 its prevalence in the Amazon basin in Bolivia, and Trigo Arce in 1935 reported cases clinically of verruga peruana in the Yungas region of Bolivia, where the natives called it "septique" and "siete." However, the first complete account of a disease clinically and bacteriologically resembling verruga peruana outside of Peru seems to be the one just published by the director of the Lleras-Acosta Infectious Disease Institute in Bogotá.[1] The epidemic seems to have attracted notice first in 1936, when it was found in the basin of the Guáitara River, a fertile, mountainous area in southern Colombia, having invaded an area of 1,000 square kilometers inhabited by 100,000 persons and including thirteen towns. Whole families were attacked. Both mild and severe cases were observed. The disease ran a fatal course of from four to eighty-seven days in some instances; in others convalescence began as late as the sixtieth or seventieth day. The mortality reached 40 per cent, and it is estimated that 1,800 persons died from the disease from January to September 1938.

The present condition is characterized by a generalized stage with low fever, pain, rapid pulse, anemia and difficult breathing, followed from thirty to sixty days later by a granulomatous eruption with almost complete absence of general symptoms. The characteristic anemia is invariably present. The parasite, found in the red corpuscles of fever patients, and in verrugas, is a multiform, coccobacillary Bartonella, which, when inoculated, kills guinea pigs and may be grown in cultures. It was transmitted to guinea pigs by lice from a human patient. Sand fleas (Phlebotomus) have not been discovered in the area, after careful search. Pinglio, a plant of the Euphorbia family, is prevalent, and the guinea pig is almost invariably a domestic animal in the houses of the Indians. Lice, fleas and chiggers are common parasites of the inhabitants.

The high death rate and epidemic character of this latest outbreak recall the situation in Peru, where 7,000 deaths were reported among workers building the Oroya railroad in 1870. The Colombian government has recently taken active measures to combat the epidemic, organizing under the health authorities of the region a special brigade, opening seven emergency hospitals, and appropriating 60,000 pesos ($35,000) for medical aid. Plans also include the permanent improvement of dwellings. The new Colombian focus justifies a surmise that similar situations may exist somewhere else in tropical areas thus far unexplored or little known.

THE CONSUMER TREND

The principle of *caveat emptor* daily loses standing. A meeting of consumers and business representatives was called at Buffalo June 5 and 6 by the National Association of Better Business Bureaus. These bureaus have done much in recent years to protect the consumer against fraud and misleading advertising, although their principal aim is to maintain the confidence of the consumer in business and in advertising. Such organizations indicate that business finds it desirable to protect the consumer for its own protection.

The consumer movement is of special interest now because of the recent legislation which has been passed for the protection of the consumer—the Food, Drug and Cosmetic Act and the Wheeler-Lea amendment to the Federal Trade Commission Act. Other government agencies which aid the consumer include the Bureau of

5. Kelly, J. F.; Dowell, Arnold; Russum, B. C., and Colien, F. E.: The Practical and Experimental Aspects of the Roentgen Treatment of Bacillus Welchii (Gas Gangrene) and Other Gas-Forming Infections, Radiology 31: 608 (Nov.) 1938.

1. Patiño-Camargo, L.: Bol. Of. San Pan., April 1939, p. 305.

Home Economics, the Post Office Department and the Bureau of Standards. For many years the A. M. A. Bureau of Investigation has cooperated with the Better Business Bureaus. Information is disseminated directly to consumers by various bureaus conducted as an integral part of the American Medical Association. In addition to the Bureau of Investigation, these include the Councils on Medical Education and Hospitals, on Pharmacy and Chemistry, on Physical Therapy and on Foods, the Bureau of Health Education, the Bureau of Exhibits and the Library.

The Buffalo meeting included manufacturers, distributors, retailers, advertisers, representatives of government agencies, consumer study groups and individual consumers. There was little evidence of a general desire to replace present systems of business with cooperatives. Indeed, it was acknowledged that the radical in the consumer movement was as much of a danger to the consumer as to business. The group appeared to be in sympathy with established methods in American business. A desire was expressed to continue activities on the only basis which was generally satisfactory—cooperation and an honest attempt on the part of each party to study and understand the problems of the other. Certain business representatives decried the fact that certain consumer groups had criticized business and advertising on the basis of a few black sheep. The consumer group did not retaliate, however, by accusing certain manufacturing interests of judging the consumer movement on the basis of the activities of the most radical elements.

From a theoretical standpoint, one speaker urged, it would be more important for the consumer to be able to determine his relative need for various articles than to determine which particular brand of an item or which particular grade of an item would give him the most for his money. However, the practical problem today is for the buyer to obtain his money's worth in purchasing what he wants, whether he has been properly educated as to his relative need for that item or not.

Certain advertising representatives were the only ones in the conference who even intimated that they were not entirely in sympathy with the consumer movement. One such representative went so far as to intimate that it was undesirable to educate the consumer as to his necessities, since it was the privilege of an American to spend his money foolishly in the purchase of luxuries. The particular medium of advertising which he represented has, incidentally, formulated a program of reform which he presented as arising from its own initiative but which appeared to be principally attempts to avoid conflict with the Federal Trade Commission under the new stipulations granted it by the Wheeler-Lea amendment.

A primary problem in consumer education and, incidentally, one not fully stressed in the business-consumer conference, is the means of fixing in the minds of consumers the sources from which they may obtain authentic information. It is far more important that they remember these sources than it is for them to recall the methods of determining whether a given product is standard or substandard and whether one brand is a better buy than another.

Consumer education is not a new concept. The fact that an organization which was created by business itself finds it expedient to call a conference of consumers and its own representatives and to discuss the problems openly leaves no doubt that the movement has developed into an important cog in the machinery of American business.

Current Comment

A NONSPECIFIC FACTOR IN RESISTANCE

The relation of physical fitness to the ability to withstand infection has proved highly variable in practice, although the belief that the physical condition affects susceptibility to infection in some instances has been amply substantiated. Experimental evidence seems to indicate that several factors may be involved.[1] An especially interesting contribution to this subject has been reported recently by Locke.[2] For the rabbit, the experimental animal used in his experiments, fitness was approximated in terms of warming time, that is the number of minutes required for the recovery of 3 degrees of body temperature following chilling to a point between 95 and 96 F. Various factors producing circulatory impairment, including shock, the administration of morphine, exposure to overheating, deprivation of food and fatigue, were studied in relation to their effect on warming time. When animals affected by these procedures were compared with normal animals in their resistance to survive the intravenous injection of virulent type I pneumococci, it was found that the warming time reveals low-grade resistance in the rabbit with quantitative precision. Locke concludes therefore that fitness as measured in this manner is a factor of resistance in the rabbit to the extent that it reflects adequacy of capacity for sustaining circulation. Adequate circulation is essential for the efficient functioning of the mechanisms maintaining tone and body temperature. Impairment in circulatory capacity sufficiently severe to produce decrease in capacity for resistance can be detected in the rabbit through the associated impairment in the capacity to maintain tone and body temperature. Both spontaneous and artificially induced improvement in capacity to sustain circulation are accompanied by correlated improvement in ability to survive intravenous injection with small numbers of virulent type I pneumococci. These interesting observations suggest that at least one of the factors in the increased resistance of physically well persons to infection lies in the capacity to maintain improved circulation. As an element of purely relative nature, however, it may also explain the extreme variation in such resistance as observed in practice.

1. Church, C. F.: Factors Influencing Nonspecific Resistance to Infection, Am. J. Pub. Health **29**: 215 (March) 1939.
2. Locke, Arthur: Nonspecific Factors in Resistance, J. Immunol. **36**: 159 (Feb.) 1939.

ORGANIZATION SECTION

GRADUATE MEDICAL EDUCATION

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

DISTRICT OF COLUMBIA

The annual scientific assemblies of the Medical Society of the District of Columbia are devoted to continuing the education of practicing physicians. The three day assembly consists of lectures, medical and surgical clinics, demonstrations and exhibits. In May 1939 the assembly was devoted to a complete review of gastro-enterology. Approximately half of the speakers were out of district physicians. Meetings were held in a local hotel. Nonmembers of the society were charged a registration fee of $3. Income from technical exhibits and appropriations from the District Medical Society aid in financing the graduate program. Registration has increased from 501 in 1936 to about 600 in 1939.

The George Washington University School of Medicine has offered one or two day clinics for graduates each February since 1933. Lectures, clinics, symposiums and demonstrations are given on various subjects by instructors at the medical school. Alumni of the university are invited. No registration fees are charged. The number of physicians attending approximates 250.

Georgetown University School of Medicine has provided a three to six day general review for graduates at the medical school and affiliated hospitals each September since 1936. In 1939 the three day course was held in June. Lectures, clinics and symposiums are given generally by the medical school instructors. About 180 physicians, alumni and friends of the university, attend each year. No registration fee is charged.

Beginning in 1937 Howard University College of Medicine, in cooperation with the United States Public Health Service, the Health Department of the District of Columbia and the Freedmen's Hospital offered a three months postgraduate course in venereal disease. Applicants, usually on recommendation of state health officers, must be graduates of approved medical schools within ten years of application and must have completed one year of internship in an approved hospital. Registration is limited to ten physicians for each of three sessions a year. A stipend of $100 a month is paid to those who come from sections 25 or more miles away from the District of Columbia. Twenty-five registered in 1937-1938 and seventeen in 1938-1939.

The weekly schedule includes four hours' experience in the urologic clinic, taking histories and examining and treating patients under supervision. Six hours is spent in the clinic in syphilology, where similar experience is afforded, including dark field examinations. Three hours a week is devoted to social service assignments. Lectures, in which epidemiology is stressed, clinical pathologic and round table conferences and periods for assigned reading complete the schedule. Dr. H. H. Hazen is director of the postgraduate course.

The Army Medical Library has made available to physicians, through an interlibrary loan service, the most extensive collection of medical literature. Publications may be borrowed by application through responsible libraries. In the Index Catalogue of the Surgeon General's Library is listed the present accumulation of medical reference material.

Because of the increasing number of periodicals, monographs and textbooks on medicine in current use, it has been difficult for the practicing physician to have at his disposal all the literature that he may require. To meet this need a nonprofit organization was formed in 1934 by cooperative agreement between the Army Medical Library and the libraries of the United States Department of Agriculture, the Geological Survey and the Bureau of Standards. This organization, known as the Bibliofilm Service of Washington, D. C., has perfected microfilms which are photographs of the printed page in bound or unbound volumes. Microfilms are developed on 35 mm. moving picture film at a price of 1 cent a page plus a 20 cents service charge for each article copied. They can be read by means of a small hand lens or with the aid of a desk projector which is available commercially. Science Service, the Chemical Foundation and the United States Navy and others cooperated in the development of this projector. It is now possible to acquire a library at low cost and to file microfilms in a remarkably small space.

The medical services of the Army, Navy, Veterans Administration and United States Public Health Service all provide postgraduate training for their own personnel.

There are 2,141 physicians licensed to practice in the District of Columbia, of whom 872 are members of the Medical Society of the District of Columbia.

NORTH DAKOTA

In 1935 the North Dakota State Medical Association appointed a committee on maternal and child welfare with Dr. J. H. Moore, Grand Forks, as chairman and the state health officer as secretary. The major objective of this standing committee, which now consists of ten members, has been to continue professional education in obstetrics. Local committees were formed to enable the physicians in each of the thirteen district medical societies to formulate their own programs. The North Dakota State Department of Health has financed the instruction with federal funds.

An out of state speaker spent two weeks in North Dakota in September 1936. Two day meetings were held in each of five cities. The district committee on maternal welfare was in charge of arrangements and during the first night of the seminar a stated meeting of the district medical society was held. Five subjects in obstetrics were discussed by the visiting physician. Local physicians also participated by presenting symposiums in which three members of the state association's committee discussed infections, toxemias and hemorrhages. Whenever possible case histories were discussed and hospital facilities were utilized. Seminars were attended by from twenty-five to thirty-five physicians in each district.

In 1937 it was recommended that pediatricians be included on the state association committee and that instruction in pediatrics and health education be added to its activities. During 1937-1938 medical extension training was continued in five other cities of the state, and an out of state obstetrician and pediatrician conducted courses similar to those given in 1936. In response to inquiry, practicing physicians stated that they favored the state association's postgraduate program and found the month of October most convenient for these courses.

The second phase of the committee's activities in North Dakota was initiated in May 1939, when the state health officer made available funds so that practicing physicians might attend a five days course in obstetrics at the University of Minnesota's Center for Continuation Study in Minneapolis. Of forty-eight who applied, ten rural physicians were selected on vote of members from as many district societies. Tuition, travel expenses and maintenance were provided.

It was proposed to offer a series of seminars in obstetrics and pediatrics in nineteen places over the state during the coming year.

Of the 508 physicians licensed in the state of North Dakota, 387 are members of the state medical association.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—H. R. 6635 has been reported to the Senate, with amendments, proposing to amend the Social Security Act in numerous respects. The reported bill does not contain Senator Wagner's amendments proposing to authorize the Social Security Board to make provision for furnishing medical, surgical, institutional, rehabilitation or other services to an ill defined class of persons who are unable to work because of disabilities that may be relieved or removed by such services. It does propose to (1) increase from $3,800,000 to $5,820,000 the appropriation authorized by the Social Security Act for maternal and child health services; (2) increase from $2,850,000 to $3,870,000 the appropriation authorized by the act for the purpose of enabling each state to provide medical, surgical, corrective and other services and care and facilities for diagnosis, hospitalization and after-care for children who are crippled; (3) increase from $8,000,000 to $12,000,000 the appropriation authorized by the act to aid states, counties, health districts and other political subdivisions of the states in establishing and maintaining adequate public health services. S. 1021 has passed the House, extending the benefits of the United States Employees' Compensation Act to members of Officers' Reserve Corps and Enlisted Reserve Corps. S. 2353 has passed the House, authorizing a federal appropriation for the construction, rehabilitation and installation at Carlisle Barracks, Pennsylvania, of a medical field service school, and such utilities and appurtenances thereto as may be necessary. S. J. Res. 107 has been reported to the Senate, proposing to authorize the President to award a gold medal of appropriate design to Dr. Anita Newcomb McGee "in recognition of her splendid service to the United States in organizing a corps of trained nurses for the United States Army during the period of the Spanish-American War and the Philippine Insurrection." H. R. 2296 has passed the House and Senate, proposing certain benefits to World War veterans suffering with paralysis, paresis or blindness or who are helpless or bedridden, notwithstanding misconduct.

Bills Introduced.—H. R. 6983, introduced by Representative Welch, California, proposes to authorize a federal appropriation to construct in California a marine hospital to be used exclusively for the care and treatment of patients afflicted with tuberculosis. H. R. 6997, introduced by Representative Poage, Texas, proposes to create a pension system for adult cripples and for aged citizens in the amount of $30 per month.

DISTRICT OF COLUMBIA

Changes in Status.—S. 1805 has passed the Senate and House, establishing a lien for moneys due hospitals for services rendered in cases caused by negligence or fault of others. H. R. 5238 has been reported to the House, with amendments, proposing to regulate the practice of optometry in the District of Columbia. As amended, the bill defines optometry "as the measurement and correction of refractive and muscular errors of the eye by any method not including the use of drugs and not including surgical procedures such as cutting or actual manipulation of the eyeball, but including the use of optical appliances for diagnosis or correction of such refractive and muscular errors."

Bills Introduced.—S. 2745, introduced by Senator King, Utah, and H. R. 7083, introduced by Representative Randolph, West Virginia, propose to authorize the Commissioners of the District to promulgate and enforce all such reasonable rules and regulations as they may deem necessary to prevent and control the spread of communicable and preventable diseases in the District of Columbia. The bill provides that it shall take effect from and after ninety days after its passage and approval, and that from and after the expiration of that period the following acts are repealed: (1) An Act to prevent the spread of contagious diseases in the District of Columbia, approved March 3, 1897; (2) An Act for the prevention of scarlet fever, diphtheria, measles, whooping cough, chicken pox, epidemic cerebrospinal meningitis, and typhoid fever, approved Feb. 1, 1907; (3) An Act to provide for registration of all cases of tuberculosis in the District, for free examination of sputum in suspected cases, and for preventing the spread of tuberculosis in the District, approved May 13, 1908; and (4) An Act for the prevention of venereal diseases in the District of Columbia, approved Feb. 26, 1925. H. R. 7086, introduced by Representative Vreeland, New Jersey, proposes to provide for insanity proceedings in the District of Columbia.

WOMAN'S AUXILIARY

Florida

The auxiliary to the Dade County Medical Association met in Coral Gables recently with forty-five in attendance. Mrs. W. S. Rosborough reviewed the book "Life and Death." The auxiliary will assist the medical society in the purchase of books and furnishings for the James M. Jackson Memorial Hospital.

Georgia

At the annual meeting of the auxiliary to the Medical Association of Georgia, Atlanta, April 25-28, the speakers were Dr. Grady Coker, president, and Dr. William H. Myers, president-elect of the Medical Association of Georgia, Mrs. Frank N. Haggard, first vice-president and chairman of organization of the auxiliary to the American Medical Association, and Mrs. W. K. West, president of the auxiliary to the Southern Medical Association.

Indiana

The auxiliary to the Marion County Medical Society held a public relations tea in Indianapolis March 13 attended by more than 200 members and guests. Dr. E. O. Asher of New Augusta addressed the group on "Advances in Scientific Control of Disease" and Harold V. Darnell on "Sanitation of Public Eating Places."

New York

The auxiliary to the Medical Society of the County of Broome was organized March 23 at Binghamton. Mrs. Daniel Swan, president of the auxiliary to the Medical Society of the State of New York, and Mrs. Luther Kice, chairman of the organization committee, addressed the newly organized group on the aims and purposes of the auxiliary. Mrs. John H. Robertson was elected president.

The auxiliary to the Medical Society of the County of Albany met at the Joseph Henry Hospital recently. Dr. James F. Rooney, past president of the Medical Society of the State of New York, spoke on socialized medicine. Mrs. Frank Coughlin, chairman of the Hygeia committee, reported that a copy of *Hygeia* had been placed in every public, parochial and private high school in the County of Albany as the year's project of the auxiliary.

South Carolina

At the annual meeting of the auxiliary to the South Carolina Medical Association in Spartanburg April 12-13 Dr. E. A. Hines, chairman of the advisory council to the auxiliary, Dr. J. R. Des Portes, president of the South Carolina Medical Association, and Mrs. Charles C. Tomlinson, president of the auxiliary to the American Medical Association, were the speakers.

Dr. Roy D. Sumner spoke on socialized medicine at a meeting of the auxiliary to the York County Medical Society March 1. Mrs. J. L. Bundy, president, welcomed the presidents of local federated clubs, who were guests of the auxiliary at this meeting.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Five Practitioners Honored for Research.—At the recent annual meeting of the Medical Association of the State of Alabama, citations were voted to five physicians for original research beneficial to mankind. According to the *Southern Medical Journal*, scrolls acknowledging the honor will be presented during July to the following:

Dr. George H. Searcy, Tuscaloosa (posthumously), for diagnosing and describing the first outbreak of pellagra in the United States in 1907.

Dr. Emit L. McCafferty, Mount Vernon, for early attempts at production and transmission of pellagra in 1907-1908.

Dr. Tom Douglas Spies, Cincinnati, for studies in the etiology, symptomatology and treatment of pellagra and allied nutritional diseases in Jefferson County, in 1935-1939.

Dr. Seale Harris, Birmingham, for first recognizing and describing a new disease entity, hyperinsulinism, in 1923.

Dr. Luther L. Hill, Montgomery, for first successfully suturing a heart wound in the United States in 1902.

CALIFORNIA

Typhoid from Domestics.—Two cases of typhoid were reported in children of two families in San Francisco recently. In both cases domestics in the families were proved to be carriers of Bacillus typhosus. One of the servants had a food handler's certificate from a health department, according to the *Bulletin* of the San Francisco County Medical Society.

Survey of Care of Mental Patients.—Dr. Walter L. Treadway, assistant surgeon general, U. S. Public Health Service, will make a survey of the care of mental patients at the University of California Medical School, San Francisco, and throughout the state. The survey is part of an examination of all the country's major public health facilities and activities that the public health service is making. At the medical school, where he is to be stationed for one year, Dr. Treadway is to make a special study of recent advances in care and treatment of mental patients made in the psychiatric division. Dr. Treadway has recently been medical officer in charge of the U. S. Narcotic Farm at Lexington, Ky.

CONNECTICUT

Personal.—The honorary degree of doctor of science was conferred on Ira V. Hiscock, C.P.H., New Haven, by Wesleyan University at its annual commencement June 18 in Middletown.——Dr. Maurice R. Moore, Norwich, has been appointed superintendent of the William W. Backus Hospital, Norwich.

First Outbreak of Smallpox in Six Years.—The investigation of a case of smallpox in Connecticut recently revealed the presence of five other cases, the first time the disease has been reported in the state in six years. According to the state department of health, the first case was in a Fairfield man who is a bus driver in Bridgeport. His three children later became ill one at a time, but his wife, who had been vaccinated, escaped. The man and his children had not been vaccinated. A relative from Bridgeport who visited the sick family became ill two weeks after the visit. This relative, on account of illness, went to the home of another relative in Stratford late in May. On June 15 a member of the Stratford family became ill and according to the bulletin of the state department of health July 3 is now under quarantine for smallpox. All the other patients have entirely recovered.

DISTRICT OF COLUMBIA

Commission on Mental Health.—Dr. Elmer Klein was appointed June 2 a member of the district commission on mental health, succeeding Dr. Loren B. T. Johnson, resigned. Dr. Bernard S. French, whose term had expired, was reappointed. The appointments were made by the district court for terms of four years beginning June 10. The commission was established a year ago to provide for the handling of insanity proceedings by experts.

Meeting of Railway Surgeons.—The forty-second annual meeting of the Association of Surgeons of the Southern Railway System was held at the Willard Hotel, Washington, June 13-15. Among the speakers were:

Dr. Muir Bradburn, New Orleans, Treatment of Fractures of the Shaft of the Femur.

Dr. James F. Mitchell, Washington, Conservatism in Traumatic Surgery.

Dr. William P. Herbert, Asheville, N. C., Abdominal Conditions as the Result of Trauma.

Dr. John R. Shacklette, Jeffersontown, Ky., The Prophylaxis and Treatment of Tetanus.

Dr. Albert C. Jackson, Jasper, Ala., What Should Organized Medicine Do About the Medical Indigent?

Dr. John B. Shoun, Elizabethton, Tenn., Our Contributions to Socialized Medicine.

Dr. Franklin Webb Griffith, Asheville, N. C., Socialized Medicine.

FLORIDA

Annual District Meeting.—The Northwest Medical District of the Florida Medical Association will hold its third annual meeting at the Community House, Marianna, July 20. Among the speakers will be:

Drs. Sidney G. Kennedy Jr., and Juriah H. Pierpont, Pensacola, Hemorrhage Complicating Empyema Thoracis.

Dr. Nathan S. Rubin, Pensacola, The Cross-Eyed Child.

Dr. Joe I. Turberville, Century, Fractures of the Pelvis.

Dr. James M. Hoffman, Pensacola, Back Pain.

Dr. Charles H. Ryals, Grand Ridge, Some Experiences of a Country Doctor.

GEORGIA

Calhoun County Drops Health Department.—At a meeting of the board of Calhoun County commissioners, May 9, it was decided to dispense with the county health department to curtail expenses, newspapers reported, effective July 1. Dr. George M. Anderson, Morgan, has been the health officer.

Changes in Health Officers.—Dr. Isbin S. Giddens, formerly of Ray City, has been appointed health commissioner of Jenkins County, with headquarters in Millen, succeeding Dr. Glenn J. Bridges, who resigned to become assistant health commissioner for Savannah and Chatham County.——Dr. Oliver W. Jenkins, Edison, has been named health commissioner of Bartow County. He will succeed Dr. Robert F. Young, Cartersville, who resigned to enter general practice in Hope, Ark.

IDAHO

Industrial Health Activities.—Dr. Samuel Weissross, director of the bureau of industrial hygiene in the state department of health, has resigned to enter private practice in Boise, according to *Northwest Medicine*. A conference of workers, employers and insurance carriers was held at the State House, Boise, to discuss measures which would reduce industrial health hazards in Idaho. The occupational disease law passed by the 1939 legislature was explained. The new law is the result of a survey made in 1938 which showed that 45,000 Idaho workers were exposed to industrial health hazards such as silicosis, lead and carbon monoxide.

ILLINOIS

Twenty-Six Teachers with Tuberculosis.—About one out of every 100 school teachers in down-state Illinois is believed to have active tuberculosis, the state department of health announced after studying the results of an examination of 2,818 persons at three state normal schools. A tuberculin skin test, followed by x-ray pictures of all positive reactors, was employed in the examination. The study disclosed twenty-six cases of active pulmonary tuberculosis, giving a rate of about 9 per thousand among the groups examined.

Chicago

Fellowship in Pediatrics.—The first endowed fellowship in pediatrics at the University of Chicago has been established by a gift of $25,000 from the Benjamin J. Rosenthal Charities. The endowment will provide an annual fellowship of about $1,000, it is reported.

Personal.—William H. G. Logan, D.D.S., M.D., has sailed for Europe to attend the meeting of the International Dental Federation, of which he is president. The meeting will be in Zurich, Switzerland, July 23-27.——The honorary degree of doctor of science was awarded to Dr. Andrew M. Harvey at the annual commencement of Knox College, Galesburg, June 13, in recognition of his work in industrial medicine. This was the fiftieth anniversary of his graduation from Knox.

Dr. Hoerr to Head Anatomy Department.—Dr. Normand L. Hoerr, assistant professor of anatomy, department of medicine, University of Chicago, has been appointed Henry

Wilson Payne professor of anatomy and head of the department at Western Reserve University School of Medicine, Cleveland. He will succeed the late Dr. Thomas Wingate Todd. Dr. Hoerr graduated at the University of Chicago in 1931. He has been a member of the department of anatomy since 1926 and assistant professor since 1933.

INDIANA

University News. — A special room for a study of the sterilization of air under the direction of Dr. Willis D. Gatch, dean and professor of surgery, Indiana University School of Medicine, Indianapolis, has been authorized as a research project, according to a recent report.——Albert H. Scheidt, assistant administrator of the Indiana University Medical Center, Indianapolis, for four years, had resigned to become director of the Chicago Hospital Council, effective July 1. He will be succeeded by Edmund J. Shea, chief medical librarian at the center since 1935.

Society News.—Dr. Ernest O. Asher, Indianapolis, recently addressed the Northeastern Indiana Academy of Medicine at Kendallville on "Gynecological Observations Made by Vaginal Examinations."——At a meeting of the St. Joseph County Medical Society, South Bend, May 23, Dr. Charles E. Savery, South Bend, discussed "Clinical Aspects of Allergy." At this meeting the society voted to employ an executive secretary. ——Dr. Hugh W. MacMillan, Cincinnati, discussed "Deep Abscesses of Neck of Dental Origin" before the Dearborn-Ohio County Medical Society in Dillsboro recently.——Dr. George H. Garceau, Indianapolis, addressed the Wayne-Union County Medical Society in Richmond May 11 on "Diagnosis and Treatment of Knee Injuries."——At a meeting of the Jasper-Newton County Medical Society in Brook June 1 Dr. Warren Reynolds Hickman, Logansport, spoke on "Eye Diseases in General Practice."——The Elkhart County Medical Association was addressed in Elkhart May 25 by Drs. Carl P. Huber, Indianapolis, and Alfred S. Giordano, South Bend, on "Cancer as Related to Female Reproductive Organs" and "Laboratory Diagnosis of Cancer" respectively.

IOWA

Personal.—Dr. John C. Dennison, Bellevue, who has practiced in Jackson County more than fifty years, was guest of honor at the annual dinner of the county medical society June 1. ——Dr. Thomas E. Eyres, Des Moines, the first director of the Polk County health unit, organized Aug. 18, 1937, has resigned to engage in private practice, it is reported.

Society News.—At a meeting of the Adair County Medical Society in Greenfield recently Dr. A. Fred Watts, Creston, discussed "Peculiarities of Symptoms in Children as Compared to Those in Adults."——Dr. William F. Braasch, Rochester, Minn., addressed the Black Hawk County Medical Society, Waterloo, recently, on dangers of delay in handling cases in which blood has appeared in the urine.——At a joint session of the Bremer County Medical Society and the staff of St. Joseph's Mercy Hospital, Waverly, recently, the speakers were Drs. Virgil S. Counseller, on "Ovarian Neoplasms: Their Pathologic and Surgical Significance"; and Malcolm B. Dockerty, both of Rochester, Minn., "Special Ovarian Neoplasms." ——The Johnson County Medical Society was addressed in Iowa City recently by Drs. James H. Allen on "Treatment of Conjunctivitis"; Alson E. Braley, "Differential Diagnoses of Cataract and Glaucoma," and Placidus J. Leinfelder, "Treatment of Minor Injuries." All are of Iowa City.——Dr. John D. Camp, Rochester, Minn., addressed the Woodbury County Medical Society, Sioux City, April 13, on "Malacic Diseases of the Bone."

KANSAS

State Board Appointments. — Recent appointments and reappointments to the state board of health include the following: Drs. Rolland W. Urie, Parsons; Harry L. Aldrich, Caney; Gilbert A. Leslie, McDonald; Jacob F. Gsell, Wichita; George I. Thacher, Waterville; Roscoe T. Nichols, Hiawatha; John L. Lattimore, Topeka; James T. Reid, Iola; William C. Lathrop, Norton, and Mr. W. E. Scott, Kansas City, attorney member. Reappointments to the state board of medical registration and examination include Drs. John F. Hassig, Kansas City; Chester E. Joss, Topeka; James E. Henshall, Osborne, and Dr. Omar L. Cox, Iola, is a new member. Other members of the board are Drs. Henry E. Haskins, Kingman; Mirl C. Ruble, Parsons, and Frederick S. Hawes, Russell.

KENTUCKY

Society News.—Dr. Oliver H. Perry Pepper, Philadelphia, addressed the Fayette County Medical Society, Lexington, at its annual dinner meeting June 13 on "Diverticulitis of the Colon."——Dr. Coleman C. Johnston, Lexington, addressed the Harrison County Medical Society, Cynthiana, at its June meeting on "Surgical Treatment of Bleeding Gastric and Duodenal Ulcers."

Personal.—Dr. John H. Rompf, recently a member of the staff of the Veterans' Administration Facility at Gulfport, Miss., has been appointed clinical director of the Eastern State Hospital, Lexington, succeeding Dr. Charles C. Phillips. Dr. Phillips resigned June 15 because of ill health.——Dr. Fred W. Rankin, Lexington, received the honorary degree of doctor of laws from the University of Maryland at the June commencement.

LOUISIANA

Society News.—At a meeting of the Orleans Parish Medical Society, New Orleans, June 12, Drs. Allan C. Eustis spoke on "Relation of Histamine to Asthma and Urticaria"; Guy A. Caldwell, "Use of Physiotherapy in Connection with Fractures and Injuries Involving the Joints," and Thomas Benton Sellers, "Hysterosalpingography." —— At a meeting of the Ouachita Parish Medical Society May 4 Dr. George W. Wright, Monroe, among others, spoke on "Postoperative Thrombophlebitis."

Dr. Matas Honored.—A certificate of honorary membership in the American Association of the History of Medicine was presented to Dr. Rudolph Matas, New Orleans, at the annual dinner of the History of Medicine Society of Tulane University May 26, for work in having "preserved and passed on to generations of students the best traditions of medical humanism." Dr. Matas is professor of general and clinical surgery emeritus at Tulane. At this meeting it was announced that a freshman course in medical history will be introduced in the 1939-1940 school session.

MAINE

Anniversary of Memorial Library.—The Frederic Henry Gerrish Memorial Library observed its second anniversary with a special teaching clinic program at the Central Maine General Hospital, Lewiston, May 19. Dr. Jonathan C. Meakins, professor of medicine and director of the department, McGill University Faculty of Medicine, Montreal, conducted clinics, round table discussions and ward walks; he also addressed the evening session on "Doctors and Libraries." Dr. Willard H. Bunker, Calais, president of the Maine Medical Association, also spoke.

MARYLAND

Personal.—Dr. Arthur Karfgin, assistant medical director of the Maryland Casualty Company, has been appointed chief surgeon, succeeding the late Dr. Allen D. Lazenby, vice president and medical director, it is reported. Dr. Karfgin has been with the company since May 1, 1937.

Dr. Turner Appointed Professor of Bacteriology.— Dr. Thomas B. Turner of the International Health Division of the Rockefeller Foundation has been appointed professor of bacteriology at the Johns Hopkins University School of Hygiene and Public Health, Baltimore. The new appointment will be effective September 1, according to the Johns Hopkins University *Gazette*. Dr. Turner, a native of Maryland, graduated at the University of Maryland School of Medicine in 1925. From 1927 to 1932 he was Jacques Loeb fellow and instructor and associate in medicine at Johns Hopkins University School of Medicine, joining, in the latter year, the staff of the International Health Division of the Rockefeller Foundation. During the past three years Dr. Turner has been engaged in postgraduate teaching and research in syphilis at the school of hygiene and public health under the auspices of the foundation.

MICHIGAN

New County Health Unit.—The W. K. Kellogg Foundation will contribute to the cost of establishing a health unit in St. Joseph County and assist with its maintenance during the first year of operation. State and federal funds will also be forthcoming. Dr. Lawrence A. Berg, Menominee, has been named director of the new department. His appointment was effective June 1, when he commenced the organization of the new unit.

Members of State Medical Board.—Six new members have been appointed to the state board of registration in medicine by the governor: Drs. Elmer W. Schnoor, Grand Rapids;

Francis B. Jarzembowski, Detroit; William C. Ellet, Benton Harbor; Luther Peck, Plymouth; Horace L. French, Lansing; Garner M. Byington, Detroit. Reappointed members are Drs. J. Earl McIntyre, Lansing; Jacob D. Brook, Grandville; William E. Tew, Bessemer, and Claude R. Keyport, Grayling.

Hospital News.—The annual spring clinic of the Providence Hospital Interne Alumni Association, Detroit, was held May 10-11. One session was devoted to a discussion of pituitary disease by Drs. Mark R. McQuiggan, Russell T. Costello and Louis J. Bailey. Other speakers were Drs. Milton G. Schmitt, Chicago, on "The Determinates of Adequate Dosage in the Use of Short Wave Diathermy"; John S. Davis Jr., New York, "Rheumatism—Diagnosis and Treatment," and James F. Kelly, Omaha, "Use of X-Ray in the Prevention and Treatment of Certain Infections with a Mobile Unit."

Medical Secretary Appointed State Health Commissioner.—Dr. Henry A. Moyer, Charlotte, recently appointed medical secretary to the governor of Michigan, has been named state health commissioner to succeed Dr. Don W. Gudakunst, Lansing. He is personal physician to the governor. Dr. Moyer graduated at the Detroit College of Medicine, now the Wayne University College of Medicine, in 1901. He once served as health officer of Eaton County and was president of the Eaton County Medical Society from 1936 to 1938. He is 63 years of age. Dr. Gudakunst has been state health commissioner since February 1938.

MINNESOTA

Fund for Cancer Research.—A gift of $14,400 has been given anonymously to the University of Minnesota Medical School, Minneapolis, to establish the Ivar Sivertsen Fund for cancer research. The fund will be administered by Drs. Harold S. Diehl, Ivar Sivertsen, Elexious T. Bell, Maurice B. Visscher, Owen H. Wangensteen and Karl W. Stenstrom, Ph.D., and will finance primarily a study of dietary and hormonal influences on malignant conditions.

Society News.—Dr. Hugo Theorell, head of the Nobel Biochemical Research Institute, Stockholm, Sweden, gave a Mayo Foundation lecture June 5 on "Structure and Function of the Yellow Enzymes." Prof. Ernst Laqueur, director of the Pharmacological Institute of Holland, Amsterdam, lectured on "Recent Advances in the Study of the Anterior Pituitary," May 22.——Dr. Leo G. Rigler, Minneapolis, delivered the presidential address before the annual meeting of the Minnesota Pathological Society May 16 on "Primary Carcinoma of Lung: Roentgenologic Manifestations."

MISSOURI

In Memory of Dr. Allison.—A bronze plaque, the gift of an anonymous donor, was presented to the St. Louis Medical Society April 25 in honor of the late Dr. Nathaniel Allison, at one time dean of Washington University School of Medicine, St. Louis. The presentation was made by Dr. Elsworth S. Smith. A graduate of Harvard Medical School, Dr. Allison served on the staffs of the medical schools of Washington, Harvard and Chicago universities. He was Chairman of the Section on Orthopedic Surgery of the American Medical Association in 1914. The bronze plaque is the work of Mr. Carl C. Mose.

NEW HAMPSHIRE

Clinic for Crippled Children.—The first orthopedic clinic held in the northern part of New Hampshire was conducted at the Littleton Hospital May 18 by Drs. Ezra A. Jones, Manchester, and Barbara Beattie, Littleton, the state board of health reports. Twenty-seven crippled children were examined. About half of these were children who had been traveling to the southern part of the state for examinations and treatment. About a fourth were children who had been receiving no treatment because of long distances and the remaining fourth were new patients. The state board of health furnished three nurses and the hospital extra nurses, x-ray and laboratory technicians.

NEW YORK

Hospital News.—The Oak Mount Sanatorium (Ontario County Tuberculosis Hospital), Holcombe, the first complete county tuberculosis sanatorium built in New York, was destroyed by fire May 31. Only three patients were confined to bed at the time and all were safely removed.——The cornerstone of a new $900,000 building for the White Plains Hospital was laid May 21.

Alumni Meeting at Syracuse.—The alumni association of the Syracuse University College of Medicine held its annual dinner meeting in Syracuse June 5 with Dr. Frederick A. Coller, Ann Arbor, Mich., as the guest speaker. Dr. Frederick W. Van Lengen, Syracuse, was elected president; Drs. Thomas F. Manley, Norwich, and Charles A. Gwynn, Syracuse, were elected vice president and secretary, respectively.

New York City

Institute for Hospital Administrators.—The first New York Institute for Hospital Administrators was held June 19 to July 1 at the College of Physicians and Surgeons of Columbia University under the sponsorship of the American College of Hospital Administrators and the Greater New York Hospital Association. Dr. Claude W. Munger, medical director of St. Luke's Hospital, was director of the institute. Lectures were presented in the mornings, field trips to hospitals took up the afternoons and there were round table discussions in the evenings.

Building for Hospital for Speech Disorders.—A new seven story building for the National Hospital for Speech Disorders was dedicated June 15. Dr. Bernard Sachs, vice president of the hospital, presided at the ceremonies. The new building, for which $250,000 was given by Mr. Lucius N. Littauer, is the third home of the hospital. It was founded in 1916 by Dr. James Sonnett Greene, still the medical director. The new quarters contain an auditorium, kindergarten rooms and special rooms for group therapy, a research laboratory, an endocrinologic clinic and a recording studio, among other facilities.

Physical Examinations Required for Teachers.—Probationary teachers who come up for permanent licenses must hereafter pass a physical examination, it was announced by the superintendent of schools. Recent experiments with x-ray examination of new teachers revealed that nearly 2 per cent of the candidates had active tuberculosis. As a result, the board of examiners now requires all candidates to have x-ray examinations. Under the same order, principals are required to report to the medical staff of the board of education all teachers who are more than 65 years old, have become eligible for retirement because of service or are in any way mentally or physically unfit to teach.

Gifts to New York University.—Cash gifts and bequests amounting to $111,617.72 have recently been announced by New York University College of Medicine. Among the larger gifts were:

Commonwealth Fund, $8,525 for the department of preventive medicine and $5,340.71 for research in obstetrics and gynecology under Dr. William E. Studdiford Jr.

Lucius N. Littauer, $5,000 for the Dean John Wyckoff Memorial Fellowship Fund.

Mrs. Edith H. de Long, $5,000 for the department of pediatrics under Dr. Charles Hendee Smith.

Lucius N. Littauer, $1,500, Lederle Laboratories, $1,000, and others, $1,236 for research on pneumonia under Dr. Jesse G. M. Bullowa.

Winthrop Chemical Company, $6,000 for the department of therapeutics.

Friedsam Foundation, $1,200 for the child neurology research fund.

More Beds for Tuberculous Patients.—The New York City Department of Hospitals has provided or has under way 1,673 of the 2,500 beds for tuberculosis that were recommended in a survey made in 1934 by a special committee with Dr. Haven Emerson as chairman. The new beds available or in prospect include: Bellevue, new building with 317 beds; Sea View Hospital, new pavilion with 250; Kings County Hospital, reconditioned building with 200 beds; Harlem Hospital, 40 beds set aside; Queens General Hospital, 32 set aside; City Hospital, 52 set aside; Neponsit Beach Hospital, 60 new beds to be added; Triboro Hospital, new 500 bed tuberculosis hospital under construction; Riverside Hospital, 110 bed unit soon to be started; alterations in progress to add 40 more beds at Willard Parker and 72 at Kingston Avenue hospitals. The department is now seeking appropriations for two 500 bed units for Harlem, the Bronx and Brooklyn. The waiting list of nonhospitalized cases May 1 was 379.

NORTH CAROLINA

Society News.—Dr. Douglas H. Sprunt, Durham, addressed the New Hanover County Medical Society, Wilmington, recently on "Increased Resistance to Infection Produced by Certain Endocrine Systems."——Dr. Merle D. Bonner, Jamestown, addressed the Guilford County Medical Society, Greensboro, May 4, on "The Use of the Bronchoscope in Conditions Other Than Foreign Bodies."——At a meeting of the Rockingham County Medical Society in Leaksville in May Dr. Kemp P. Neal, Raleigh, discussed recent advances in chest surgery.——Dr. Vance P. Peery, Kinston, was elected president of the North Carolina Hospital Association at the annual meeting in Winston-Salem in April.

Dr. Manning Retires.—Dr. Isaac Hall Manning, professor of physiology, University of North Carolina School of Medicine, Chapel Hill, since 1901 and dean of the school from 1905 to 1933, has retired from active duty and will be professor emeritus. Dr. Manning is a native of Pittsboro. In 1933 he was president of the Medical Society of North Carolina and has been president of the North Carolina Hospital Savings Association since its organization about 1935. Friends and former students from all parts of the state paid tribute to Dr. Manning at a dinner June 7. Among the speakers were Drs. Wingate M. Johnson, Winston-Salem; Hubert A. Royster, Raleigh; Wilburt C. Davison, Durham; William H. Smith, Goldsboro; John B. Cranmer, Wilmington; Foy Roberson, Durham, and Walter Reece Berryhill, Chapel Hill. Members of the faculty also honored him at a dinner.

OHIO

Public Health Meetings.—Dr. Charles A. Doan, Columbus, was elected president of the Ohio Public Health Association at its annual meeting in Columbus May 25-26. The guest speaker at the meeting was Dr. Esmond R. Long, Philadelphia, on "Problems of Tuberculosis Control." Dr. Doan and Dr. Roll H. Markwith, state director of health, spoke at the annual luncheon.——Dr. Holley H. Pansing, Dayton, was elected president of the Ohio Federation of Public Health Officials May 19 in Columbus. Among the speakers were Nathan Sinai, Dr. P. H., Ann Arbor, Mich., on "Public Health of Tomorrow," and Dr. Carl A. Wilzbach, health officer of Cincinnati, on the syphilis control problem in Cincinnati.

PENNSYLVANIA

District Meetings.—The Sixth Councilor District of the Medical Society of the State of Pennsylvania held its annual meeting at Birmingham, June 15. Drs. Lawrence W. Smith and William Wayne Babcock, Philadelphia, presented papers on "Effect of Temperature on Cancer Cell Growth" and "Recent Advances in Surgical Approaches" respectively. In the afternoon, Dr. Walter F. Donaldson, Pittsburgh, secretary of the state society, discussed the Wagner health bill; Dr. John J. Shaw, state secretary of health, the program of the state health department; Dr. David W. Thomas, Lock Haven, president of the state society, "Medicine Faces Crisis," and Mrs. Donaldson, president of the state woman's auxiliary, the program of the auxiliary.——A symposium on pneumonia was presented at the annual meeting of the Eighth Councilor District at Grove City June 21 by Drs. Edward L. Bortz and Leon H. Collins Jr., Philadelphia, and George J. Kastlin, Pittsburgh. A program on economics was presented by Drs. Charles H. Henninger, Chauncey L. Palmer and Walter F. Donaldson, all of Pittsburgh.——The annual meeting of the Ninth Councilor District was held in Indiana June 22. The scientific program included addresses by Drs. Ford M. Summerville, Oil City, on "Medical Testimony"; Kelse M. Hoffman, Franklin, heart disease and Belford C. Blaine, Pottsville, "Work Accomplished by the State Society Commission on Diabetes." Dr. John J. Shaw, state secretary of health, described the work of his department and Dr. David W. Thomas, Lock Haven, president of the state society, the activities of the society.

Philadelphia

Alvarenga Prize Awarded to Dr. Goldblatt.—The College of Physicians of Philadelphia announces that the Alvarenga Prize for 1939 has been awarded to Dr. Harry Goldblatt, professor of experimental pathology and associate director of the Institute of Pathology, Western Reserve University School of Medicine, Cleveland, for his contributions to knowledge of the pathogenesis of hypertension. The Alvarenga Prize is awarded each year on July 14, the anniversary of the death of the donor, Pedro Francisco daCosta Alvarenga of Lisbon, Portugal, who was an associate fellow of the college. It is given to the author of "the best memorial upon any branch of medicine, which may be deemed worthy of the prize."

New Public Health Department.—The University of Pennsylvania School of Medicine has established a department of public health and preventive medicine, with Lieut. Col. Arthur Parker Hitchens, Medical Corps, U. S. Army, as head of the department and George S. Pepper professor of public health and preventive medicine. From 1920 to 1929 the university conducted a school of hygiene and public health. That course will be revived, it is reported, and all undergraduate courses in this field will also be placed under the new department. Colonel Hitchens has been assistant professor of military science and tactics in the Reserve Corps at the university this year. He was for a number of years connected with the Mulford laboratories. From 1925 to 1929 he served as technical adviser in public health and sanitation on the staff of Gen. Leonard Wood in the Philippines.

SOUTH CAROLINA

Poliomyelitis Epidemic Decreases.—The poliomyelitis outbreak in South Carolina is decreasing, health officials reported early in June. At that time there had been ninety-nine cases in Charleston and forty-five outside the city. Orangeburg County had the largest number of cases—fourteen—of any single county, no other having more than four. Plans for rehabilitating the victims were begun immediately after funds amounting to $15,300 were made available by the National Foundation for Infantile Paralysis and the Children's Bureau, U. S. Department of Labor. The services of orthopedic surgeons and pediatricians were made available and four orthopedic nursing supervisors were brought into the state from Boston and New York. Hospital care was provided in some cases. The orthopedic nurses have conducted an educational program for local public health nurses in addition to visiting patients.

TENNESSEE

Society News.—Dr. Edward Dunbar Newell addressed the Hamilton County Medical Society, Chattanooga, May 25, on "Indications for Drainage of the Common Bile Duct."——Dr. Clifton J. Reynolds, Bluefield, W. Va., addressed the Sullivan-Johnson Counties Medical Society in Kingsport May 3 on prostatism.——Dr. Lucius C. Sanders addressed the Memphis and Shelby County Medical Society May 16 on "Medical Diseases of the Colon."

Upper Cumberland Meeting.—The Upper Cumberland Medical Society held its forty-fifth annual meeting in Cookeville June 13-14 with the following speakers, among others: Drs. John T. Moore, Algood, on "Acute and Chronic Pericarditis"; Carl R. Crutchfield, Nashville, "Carcinoma of the Colon and Rectum"; Roscoe C. Gaw, Gainesboro, "Relation of Upper Respiratory Infection to Chest Pathology," and W. A. Howard, Cookeville, "Symptoms and Medical Treatment of Duodenal Ulcer." Officers elected were Drs. A. H. Crouch, Forbus, president; Edward D. Gross, Chestnut Mound, Lex Dyer, Cookeville, and O. Reed Hill, Lebanon, vice presidents, and Luther M. Freeman, Granville, secretary.

TEXAS

Changes in State Medical Board.—Dr. Claurice M. Phillips, Levelland, and E. W. Wilson, D.O., San Antonio, were recently appointed to the state board of medical examiners. Drs. Thomas J. Crowe, Dallas, secretary of the board, and Charles S. Carter, Bells, were reappointed for six year terms.

VIRGINIA

Society News.—Dr. Karl S. Blackwell, Richmond, was elected president of the Virginia Society of Ophthalmology and Otolaryngology at its annual meeting in Roanoke in May; Dr. George G. Hankins, Newport News, vice president, and Dr. Mortimer H. Williams, Roanoke, reelected secretary. Drs. Daniel B. Kirby, New York, and Edward A. Looper, Baltimore, were guest speakers.——At a quarterly meeting of the Southside Virginia Medical Association in Petersburg June 13 the speakers included: Drs. Edward H. Williams, Richmond, on "Psychopathic Conditions"; Halstead S. Hedges, Charlottesville, "Ocular Manifestations of Systemic Diseases," and Samuel A. Vest, Jr., Charlottesville, "Uses of Sulfanilamide in Urology."

Changes in Health Officers.—Dr. William W. Fuller, Williamsburg, has been appointed director of the Peninsula health district to succeed Dr. Jack B. Porterfield, who has joined the staff of the state health department in Richmond. ——Dr. Benjamin R. Allen, Chatham, formerly health officer of the Pittsylvania Valley district, has been appointed health officer of the Suffolk-Nansemond-Isle of Wight district, succeeding Dr. Thomas Scarlett. Dr. Scarlett has been assigned to the Rockingham County health district with headquarters in Harrisonburg. Dr. Wyatt E. Roye, formerly of Richmond, has been appointed to succeed Dr. James H. Gordon in the Alleghany-Botetourt district with offices in Covington. Dr. Gordon resigned to take graduate work in Philadelphia.

WISCONSIN

Society News.—Dr. Harold E. Marsh, Madison, discussed "Sulfapyridine and Its Use in the Treatment of Pneumonia" at a meeting of the Columbia-Marquette-Adams County Medical Society May 16 in Portage.——Dr. Elmer L. Sevringhaus, Madison, addressed the Marathon County Medical Society, Wausau, May 23 on recent advances in endocrinology.

PHILIPPINE ISLANDS

Annual Medical Meeting.—The thirty-sixth annual meeting of the Philippine Islands Medical Association was held in Baguio May 2-5. The name of the organization was changed to Philippine Medical Association and the following officers were elected: Drs. Jose C. Locsin, Silay, president, reelected; Fernando D. Manalo, Baguio, and Bonifacio Mencias, Manila, vice presidents. Dr. Antonio S. Fernando, Manila, is secretary. Included on the program were the following papers:

Drs. Antonio G. Sison, Jose K. Katigbak, Florencio N. Quintos and Manuel A. Hernandez, Manila, The Tuberculin Test at Various Ages: A Preliminary Report on the Study of a Phase of the Epidemiology of Tuberculosis in Manila.

Drs. Jose Albert and Florencio N. Quintos, Manila, The Use of Sulfanilamide.

Drs. Regino J. Navarro and Felipe B. Gomez, Manila, Studies of the Comparative Specificity of the Wassermann and Kahn Tests in Syphilis and Yaws.

Dr. Conrado T. Mata, San Juan del Monte, Thiamin Chloride in Infantile Beriberi.

Dr. Francisco T. Roque, Baguio, Influence of the Altitude and External Temperature on Blood Pressure.

Dr. Antonio Ejercito, Manila, Atabrine in Malaria Prophylaxis.

Dr. Fidel C. Plantilla, Cebu, Leprosy Transmission.

Dr. Jose C. Manalang, Culion, Fate of Culion Patients Presented to the Local Negative Examining Committee from 1922 to 1938.

Drs. Agerico B. M. Sison, Regino J. Navarro, Manila, and Delfin Ordoñez, Bacolod, Is True Pernicious Anemia Found in Filipinos?

GENERAL

Casselberry Prize Awarded.—The Casselberry prize of the American Laryngological Association, amounting to $500, has been divided between Dr. Brien T. King, Seattle, for his operation to relieve abductor paralysis by use of the omohyoid muscle and Dr. Hermon Marshall Taylor, Jacksonville, Fla., for his film study of the hygiene of swimming.

Janeway Medal Awarded to Dr. Failla.—The American Radium Society awarded its Janeway Medal for 1939 to Gioacchino Failla, Sc.D., physicist to Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, at the annual meeting in St. Louis May 15. Dr. Failla was at one time associated with Dr. Henry H. Janeway, for whom the medal is named.

Congress for Microbiology.—The third International Congress for Microbiology will be held at the Waldorf-Astoria, New York, September 2-9. More than 600 papers will be read. Any one interested in the subject may attend, an announcement emphasizes. Those who wish to attend should communicate with the treasurer, Kenneth Goodner, Ph.D., Rockefeller Institute for Medical Research, York Avenue and Sixty-Sixth Street, New York. The registration fee is $5.

Society News.—The ninth annual convention of the Biological Photographic Association will be held at the Mellon Institute for Industrial Research, Pittsburgh, September 14-16. ——The eleventh annual meeting of the Central Association of Obstetricians and Gynecologists will be held in Kansas City, Mo., November 2-4, with Dr. Edward A. Schumann, Philadelphia, as guest speaker.——The Pacific Coast Society of Obstetrics and Gynecology will meet in Portland, Ore., November 8-11.

Physicians Requested to Watch for Criminal.—The police department of Lackawanna, N. Y., requests that physicians watch for Lee Russell, a fugitive from justice who may seek treatment for a gangrenous ulcer. Russell is wanted by the police for murder. He is 44 years old, 5 feet 9 inches tall and weighs 146 pounds. He has light blue eyes, iron gray hair and is of medium build. His right leg has been amputated between the knee and hip and his right arm may be infected. He may seek treatment at government hospitals or may apply for treatment through welfare agencies. Physicians are asked to notify local police to apprehend Russell if he appears.

The Assets of American Foundations.—American foundations now have assets of more than $1,200,000,000, according to a report recently published by the Raymond Rich Associates of New York. Of 243 foundations listed, 121 reported capital assets of $945,443,637 at the end of 1937, the latest year for which figures were available. For the other 122 that did not make public the extent of their assets, available information indicates that they aggregate about $250,000,000. Among the largest were: Rockefeller Foundation, $184,435,516; Carnegie Corporation of New York, $163,841,376; General Education Board, $54,607,431; Commonwealth Fund, $51,830,504; Kresge Foundation, $50,358,564; W. K. Kellogg Foundation, $46,609,613; Carnegie Institution of Washington, $36,506,669, and the Carnegie Foundation for the Advancement of Teaching, $29,031,848. Certain foundations reported decreasing assets, most of them being those that have been appropriating from capital for project grants as a matter of policy.

Medical Program at Obstetrics Congress.—The preliminary program of the section on medicine of the American Congress on Obstetrics and Gynecology to be held in Cleveland September 11-15 has been announced. Among the papers listed are:

Dr. David S. Hillis, Chicago, Treatment of Abortions.

Dr. Edwin M. Jameson, Saranac Lake, N. Y., Management of Tuberculosis Complicated by Pregnancy.

Dr. Howard C. Taylor Jr., New York, The Newer Conception of Ovarian Neoplasm.

Dr. John Rock, Boston, Diagnosis and Treatment of Ectopic Pregnancy.

Dr. John W. Harris, Madison, Wis., Practical Consideration of Labor Complicated by a Contracted Pelvis.

Dr. Edward A. Schumann, Philadelphia, Pathology and Treatment of Retained Placenta.

Dr. August A. Werner, St. Louis, Treatment of Menopausal Disturbances.

Dr. Samuel R. Meaker, Boston, Sterility in the Female.

Dr. Perrin H. Long, Baltimore, Sulfanilamide in Obstetrics and Gynecology.

Dr. Frank W. Lynch, San Francisco, Immediate and Remote Complications of Labor.

There will be also round table discussions each day at the noon hour on the following subjects: toxemias of pregnancy; genital infections; obstetric and gynecologic hemorrhages; the fetus and the newborn; forceps, occiput-posterior and breech presentation; anesthesia, analgesia and amnesia in labor.

Smallpox Reaches New High.—A total of 15,111 cases of smallpox was recorded during 1938 as compared with 11,687 in 1937 and 7,823 in 1936, according to the *Statistical Bulletin* of the Metropolitan Life Insurance Company. As usual, the states chiefly responsible for the high smallpox prevalence last year were those lying north of the Ohio and west of the Mississippi rivers. These states, whose total population is only slightly more than half of the entire population of the United States, reported 14,166 cases of smallpox in 1938 as against only 945 cases for the rest of the country. In contrast, not a single case of the disease was reported in New England, New York, Pennsylvania, New Jersey, Delaware, Maryland and the District of Columbia, the entire group accounting for a population of 39,000,000. New Jersey, with a population of about 4,400,000, has not had a single case of smallpox since 1931, while North and South Dakota, Montana, Idaho, Oregon, Wyoming and Utah, whose combined population is less than that of New Jersey, reported 12,666 cases during the same period. The *Statistical Bulletin* points out that New Jersey recognizes vaccination as a preventive of smallpox while the other seven states generally oppose compulsory vaccination. Three of the western states actually prohibit compulsory vaccination by statutory regulation, regardless of prevailing circumstances. The mild character of the prevailing smallpox is a factor in the complacent attitude of the western states. The avoidance of vaccination by so large a part of the population creates a fertile field for the spread from sporadic cases of malignant smallpox introduced from outside sources. The potentialities in this respect loom greater when the ease and rapidity of present day transportation are considered. Canada also showed an increase in 1938, recording 127 cases as compared with sixty-one in 1937 and sixty-two in 1936. However, the case rate was only 1.1 per hundred thousand as compared with 11.6 for the United States.

CANADA

Mickle Award to Dr. Best.—The University of Toronto Faculty of Medicine through its council has awarded the Charles Mickle Fellowship for 1939 to Dr. Charles Herbert Best, professor of physiology in the university, for his contributions to physiology, especially those related to diabetes and carbohydrate metabolism, to histamine and histaminase, to choline and fat metabolism and to thrombosis and heparin. The award is the income from $25,000 bequeathed by the late Dr. William J. Mickle.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 17, 1939.

Clarification of the Abortion Law

The profession has felt for some time that the law of abortion should be amended. Two years ago the government appointed a committee of gynecologists, physicians, lawyers and persons in public life to inquire into abortion and consider what steps should be taken to reduce its mortality and morbidity. A year ago the subject came into prominence when a gynecologist, Mr. Aleck Bourne, was prosecuted for curetting a girl aged 14 who became pregnant after rape (THE JOURNAL, Aug. 20, 1938, p. 731). The law recognized only danger to life as justification for induction of abortion, and the prosecution stated that Mr. Bourne had never alleged that the operation was necessary to preserve life. Mr. Bourne, however, contended that the terror of the girl under the circumstances would be detrimental to pregnancy and labor and that he could not draw a line between danger to life and danger to health. His view was supported by other gynecologists, and the judge, after stating that a case had never come before a jury under similar circumstances, agreed with Mr. Bourne, who was acquitted.

The committee has now presented its report. Its most important recommendation is that the law should be so amended as to make clear that a physician who *bona fide* induces abortion to safeguard or restore the health of his patient commits no offense. In all cases of therapeutic abortion he should be obliged to obtain the written agreement of a colleague who has examined the patient and within forty-eight hours of operation should notify the local health officer. Two members of the committee dissented, because the proposal would not control unscrupulous practitioners and would in the public mind associate the health services with police functions. For some time a section of the medical profession has advocated relaxation of the law of abortion. The committee said "The induction of abortion is on ethical, social and medical grounds essentially an undesirable operation, justifiable only in exceptional circumstances," and it is "strongly opposed to any broad relaxation of the law designed to make social, economic and personal reasons a justification." It would welcome the legalization of abortion after rape but has been unable to devise a scheme to meet the legal and other difficulties. It does not support permission for the termination of pregnancies starting before the age of 16 or resulting from incest or likely to transmit hereditary disease, as has been advocated by some. One member dissented and would legalize abortion for women who had had four pregnancies which continued until the viability of the fetus.

Anorexia Nervosa Mistaken for Simmonds' Disease

Anorexia nervosa was first described and so named by the English physician Sir William Gull seventy years ago. His description has been overlooked in other countries; in Germany the disease has been confused with Simmonds' disease, an organic disease of the pituitary attended with wasting. Gull showed that anorexia nervosa is a functional disease depending on a morbid mental state. At the Royal Society of Medicine Prof. J. A. Ryle, opening a discussion, said that his observations show that 90 per cent of the cases occur in women, 70 per cent of whom are below the age of 30. Nearly all are unmarried. The majority may be classified as psychoneurotic but there are borderland graver cases which, as Ross has suggested, may be termed anorexia psychotica; but the adjective "nervosa" is sufficiently comprehensive to include both groups. In the etiology the emotional instabilities of young adult life play an important part. Among the contributory factors, other than "slimming," are love affairs, school attachments and jealousies and unhappy home life; perpetuating factors include morbid enjoyment of the anxiety aroused by the illness.

The clinical picture is of a young woman in advanced starvation. The abdomen is scaphoid. The face is thin but the color is retained. There is fine downy hirsuties on the cheeks, forearms and back. The loss of weight is anything from 1 to 4 stone (6.35 to 25 Kg.). Amenorrhea is nearly constant. Emotional derangement is not far to seek. Under sensible institutional treatment the prognosis is almost uniformly good. Cases treated late or inadequately may be fatal—from simple starvation or from tuberculosis. The patient should be kept in bed at first. The treatment is feeding with straightforward explanation and assurance. Dr. J. H. Sheldon said that up to 1930, anorexia nervosa attracted little attention in Germany, being regarded as simply a curiosity in hysteria. Then came the description by Simmonds of the effects of destruction of the anterior pituitary, and physicians awoke to the fact that many young women were not only wasted but sometimes died of wasting. Knowing nothing of anorexia nervosa, many physicians were describing and are still describing these cases as examples of Simmonds' disease. Then anorexia nervosa was discovered and given a variety of names in Germany and Scandinavia. Sheldon examined the symptoms of anorexia nervosa in the light of what occurred in Simmonds' disease and starvation. These three have in common loss of weight, amenorrhea, lowered basal metabolism, alterations in carbohydrate metabolism, subnormal temperature, slow pulse and hypotension. In Simmonds' disease the body adjusts itself to a lowered food intake by a decrease of anterior pituitary activity. Anorexia nervosa may be regarded as functional Simmonds' disease, but it departs from the latter in one symptom; hirsuties is frequent but has never been described in Simmonds' disease. It is difficult to find what happens in famine. But in the Irish potato famine of 1845 hair an inch long on the face and arms of children was described. This increased growth of hair supports Sheldon's hypothesis that the body adapts itself to starvation by a series of coordinated changes. The hirsuties may be regarded as an unnecessary but inevitable by-product of increased activity of the adrenal cortex. Alone among the endocrine glands the adrenal enlarges in starvation.

Preparations for Civilian Air Raid Casualties

With the cooperation of the Medical Research Council, plans are being made for a national blood transfusion service to be used in the event of air raids. Volunteers prepared to become blood donors on the outbreak of war are to be registered. In view of the large number required, a committee of publicity experts has offered its services, in an honorary capacity, to make the scheme known. It is estimated that in the center of London alone 100,000 volunteers would be required, and in the area just outside London 80,000. In this area the Medical Research Council will set up special types of refrigerating plants for the storage of blood. Speaking at a meeting held in London, Dr. Janet Vaughan of the Medical Research Council did not think it an exaggeration that in the next war blood transfusions would be as important as bandages. The experience of the Spanish civil war showed that at least 10 per cent of the casualities could be saved by blood transfusion. The new service will be independent of any existing arrangements of the hospitals for transfusions under normal peace conditions.

In parliament the earl of Lucan, for the government, said that the work of providing 100,000 additional beds in existing hospitals for an emergency was well advanced; 150 institutions had been earmarked for upgrading, and arrangements were proceeding for the necessary adaptations and providing equipment. It had been decided to erect in England and Wales as soon as possible new hospital buildings in the form of huts for accommodating from 30,000 to 40,000 beds and in Scotland for 9,000 to 10,000 beds. Supplies, including blankets and pillows, drugs and dressings, will be distributed by the end of July.

PARIS

(From Our Regular Correspondent)

June 19, 1939.

The Order of Physicians

Belgium has just organized the Order of Physicians. Like France, Belgium did not have a constituted body charged with professional ethics. In these last years, however, the increasing importance enjoyed by physicians in France in the administration of social laws had opened the door to abuses which had to be repressed. With the cooperation of the medical syndicates, administrative boards were elected by their peers. The function of these boards was to maintain the fundamental ethics of the medical profession in their relations with the government or in all cases, increasingly numerous, in which the physician is not paid by the patient whom he treats. These boards constituted a sort of paternal jurisdiction. Their instruments were primarily persuasion and reprimand, but they could inflict more serious penalties. Their functions included the accidents of work involving the responsibility of physician to patient, care for the war victims, for which the state allows compensation, and social insurance. Besides, the syndicates had organized within their own organization what might be called family councils, which adjusted the differences arising between physicians and pronounced censure, though with no official validity. The syndicates also vigorously combated illegal practice but were checkmated by that form of charlatanism which flourishes under the protection of a diploma.

The Order of Lawyers is very old. It is chosen by the lawyers themselves and exercises a strict supervision over the members of the bar. But the governments that succeed one another in France, whatever their political tendencies may be, generally regard everything that tends to increase the independence of physicians with distrust. They accepted an Order of Physicians but wished to control it by the appointment of magistrates and functionaries as in England. The first draft establishing the Order of Physicians was prepared in 1842, but the medical profession was always opposed to it, wishing to retain control.

There has been much discussion of the Order of Physicians without leading to any agreement. Some find the role of the government tyrannical; others find fault with the pretensions of the physicians. Some physicians themselves affirm that the order would oppress the small fry and favor the bigwigs and hinder scientific independence. This is typical of French individualism. If by chance individualism came to be suppressed in the world, its last citadel would certainly be the medical profession. The activity of the syndicates finally surmounted these obstacles and in 1935 the chamber of deputies voted a law conforming or almost conforming to the wishes of the profession. It was adopted by the senate with some modifications. All that is needed now is the ratification by the chamber of deputies, which is not likely to be delayed. The law which goes into effect in Belgium is almost the same as the French law.

The French physicians will benefit by a tribunal which they themselves will elect and which will safeguard, for the benefit of all, the traditions of honor which constitute the foundation of medicine.

The Action of Sulfanilamides

Levaditi, Vaisman and Krassnoff have pointed out that sulfanilamides act by modifying the interior milieu, thus making it unfit for the multiplication of pathogenic micro-organisms and their capsulation. The micro-organism deprived of its capsulogenesis easily becomes the prey of phagocytes, and sterilization is thus obtained. These authors presented before the Académie de médecine the results of an investigation dealing with the bacillus of Friedländer. They inoculated peritoneally a number of mice, part of which were subjected to sterilizing drugs. The majority of the animals were killed and examined after the start of the experiments. Bacillary capsulation was accomplished toward the fifteenth hour in the control subjects. In the treated mice poor capsulation toward the tenth hour was observed; this anomaly coincided with the influx of phagocytes into the peritoneum. The mice that were not killed got well. The process of healing was clearly marked on the one hand by involution of the micro-organisms and their capsulogenic faculty and on the other hand by contemporary intense phagocytosis of the micro-organisms. The capsule acts as an armor against the macrophages; in its absence the micro-organism behaves like a simple saprophyte. However, it was necessary to prove that phagocytosis does not depend on a change of the macrophages caused by the presence of the micro-organism; in other words, that it is the capsulary protection and not the incapacity of the leukocytes which protects the micro-organism from destruction. Levaditi and his collaborators proved this by injecting into several mice a mixture of capsulogenic bacilli and of bacilli coming from a stock with weak capsulogenesis. After a given time the bacilli without capsules were devoured, while the others remained intact or almost intact. Every factor which directly or indirectly diminishes or suppresses the faculty of a micro-organism to form its own capsule in vivo comes to the aid of the defenses of the organism by making its micro-organisms vulnerable.

Tar on Roads and Cancer of Lungs

For years a recrudescence of primary pulmonary cancer has been observed in France. Kling, Samssonov and Héros think that one of the causes of this increase is the tarring of roads. Statistics offer little to confirm the responsibility of tar. Kling and his collaborators do not propose to proscribe tarring but they would like to see employed only innocuous substances. Benzopyrine contained within the tar used nowadays has a high cancerigenic effect on animals, inducing cancers of the epidermal epithelioma type. Benzopyrine can be mixed accurately with tar. Its proportion is about 0.5 per cent. Since from 2 to 3 Kg. of tar is spread over a square meter, one can gage the amount of benzopyrine used. Benzopyrine adheres solidly to particles of silica and other materials spread over roads. The benzopyrine-impregnated dust raised by the wind can be borne a great distance from its source and carry with it the harmful tar. The remedy for this danger, according to the authors of this communication to the Academy of Medicine, is the use of substances devoid of cancerigenic properties. A certain number of substitutes for tar in use at present for the coating of roads, such as natural pitch and petroleum resin, do not cause cancer in animals.

Meeting of Insurance Physicians

With Sir Walter Langdon-Brown and Paul Hörnig as honorary chairmen and Professor Loeper as actual chairman, the second international meeting of physicians on the staffs of life insurance companies was held recently. Sixteen countries were represented. The principal question was no doubt that of mortality exceeding expectancy calculations, or the increased risk assumed in permitting persons whose health is not absolutely normal to benefit from the advantages of life insurance by allowing them to pay the premium corresponding to their age, whereas in fact they represent a greater risk than their age indicates. The computation of the adjusted age necessitates considerable statistical labor, the results of which control the individual appraisals. Additional topics were hyperthyroidism, disorders of the metabolism, decreased mortality from tuberculosis and its causes, insurance rates for persons of excess weight, tobacco and its effects (which seem to have been exaggerated), albuminuria and the science of statistics, which ought not to be considered as in opposition to clinical procedure but associated with it and the importance of which will

be all the more significant as its methods become more generalized and standardized. The next meeting will be held in Rome in 1942.

Rheumatism

In the *Revue du rhumatisme,* Coste estimates the cost of rheumatism in different countries. In England it is 17 million pounds. In Germany 10 per cent of the workmen of Berlin incapacitated by diseases suffer from rheumatism. In Sweden nearly 6 million crowns is spent on it. In the United States rheumatism is estimated to cost about $200,000,000. In France in 1936 one of the leading social insurance fund organizations found that rheumatism accounted for 36.8 per cent of the total days of illness, without including the expenses for hospitalization and unavailability. The average duration of treatment or unavailability for work was sixty-five days. In a large Paris factory the rate of unavailability on account of rheumatism was 21.26 per cent. In Paris hospitals rheumatic patients cost more than 10 million francs annually. Rheumatic endocarditis, however, tends to decrease in frequency and represents about 10 per cent of all cardiac disorders. The other forms of rheumatism are constantly increasing. These figures justify the active campaign undertaken at present against rheumatism in France. According to Lacapère, rheumatism ought to be attacked first of all by making available special services. It is necessary also to improve the hospitalization of rheumatic persons, to utilize therapeutically the warm springs with which the country is well endowed and finally to build centers of convalescence in order to restore the patient to economic life as far as possible. Social organizations have an important role in this plan, for it goes beyond purely medical limits. It is no less important to educate the public regarding rheumatism.

POLAND

(From Our Regular Correspondent)

Warsaw, June 4, 1939.

Research on the Gonadotropic Effect of Tumors

Dr. J. Flaks and A. Ber performed at the Institute of Histology of the Warsaw University research on the relation between malignant tumors and the action of the gonadotropic principles of the hypophysis. In previous experiments the authors found that the gonadotropic principles of the hypophysis did not exert their usual influence on the genital system of mice which had been grafted with sarcomas of Ehrlich. Injections of as much as 500 rat units of gonadotropic substance did not result in growth of the graafian follicle in such mice, estogen production and estrual changes in the vagina or in development of a corpus luteum. Since injections of estrogen were followed in these mice by the usual estrual changes in the vagina, the lack of such changes after administration of gonadotropic principle alone seems to be due rather to the influence of the tumor on the ovary. This interference of tumors with the gonadotropic principle occurs only if the sarcoma has grown to a sufficient size and its weight exceeds one fifth of the whole body weight of the mouse. The authors divided this inhibiting influence of tumors into two elements: the anti-A factor, interfering with ovulation, and the anti-B factor, interfering with the development of the corpus luteum. To determine the clinical value of these observations, methyl alcohol extract from urine of patients with malignant tumors was injected into mice receiving simultaneously gonadotropic substance. The authors examined lately the effects obtained by injection of urine extracts of 112 patients: sixty-three with cancers, forty with other diseases and nine healthy subjects. There were some differences between the influence of gonadotropic substance on mice with ingrafted tumors and on those receiving injections of urine extract of cancerous individuals. Since in the latter the urine extract of cancerous patients did not interfere with the development of corpora lutea, it might be assumed that the extracts from urine of patients with cancers contain only the anti-A agent. The presence of this factor was stated in 81 per cent of urines of persons with cancer and in only 27.6 per cent of persons with such diseases as tuberculosis, diabetes, stomach ulcer and heart failure, and in no urine of normal subjects. Further research is necessary to examine conditions in which there appears to be a positive inhibiting reaction in noncancerous individuals.

Treatment of Burns from Irradiation

Skin burns from x-rays are often resistant to any attempt at treatment. Good effects of blood transfusion in one case of x-ray burn was reported some years ago by Dr. F. Zalewski from Lwów, Poland. Dr. F. Łukaszczyk, director of the Warsaw Radium Institute, reported recently on the effects of blood transfusions in seven cases. The transfusions were administered repeatedly in amounts of from 100 to 150 cc. of blood per dose. Prompt healing and cicatrization occurred in all cases, although the burns had been resistant to other methods of treatment.

OSLO

(From a Special Correspondent)

June 14, 1939.

Norway Regulates Psychoanalysis

Psychoanalysis having run riot in Norway for several years to the financial benefit of the psychoanalyst, the inevitable reaction has set in. Dr. Ragnar Vogt, professor of psychiatry at the University of Oslo, in 1937 publicly denounced a state of affairs little short of scandalous. Psychoanalysis, he said, had become a vogue, a tragic feature of which was the evolution of an interminable chain of psychoanalysts. The patient who was analyzed yesterday set himself up today as a psychoanalyst. Professor Vogt drew attention to the possibility of curbing the activities of these amateur psychoanalysts by legislative measures. July 15, 1938, effect was given to this suggestion in a royal edict. According to this edict, which is supplementary to earlier legislation of 1927 and 1936, psychoanalysis is defined as a process which is continued for some time and which aims to clarify, interpret or otherwise influence unconscious mental processes. Psychoanalysis thus defined must not be undertaken even by doctors unless they have been given special permission by competent authority. In 1927 legislation was adopted limiting the activities of qualified doctors in certain fields in which they did not have the competence of specialists. This legislation aimed to prevent bodily injury to patients under the care of doctors without special knowledge of dangerous therapeutic measures. The legislation of 1938 extended this principle to the prevention of grievous mental injury. The Oslo Faculty of Medicine appointed a committee of three members to aid the country's medical director in working out rules to govern the activities which a doctor may or may not undertake without special permission. Henceforth if a psychoanalyst is challenged in connection with his treatment of patients he may appeal to the crown against the rulings of his judges. Perhaps the mere prospect of a prosecution and punishment has curbed the most outrageous psychoanalytic offenders.

Infectious Abortion in Cattle

The state veterinary director, Dr. Thorshaug, is having success in his campaign against brucellosis in cattle, which started in 1935 and was based on far reaching propaganda and educational activities, the slaughter of infected cattle, the disinfection of suspected buildings and utensils, and compensation by the state for the farmer. He had made a census of infected herds based on the notification of veterinary surgeons who had tested cattle on a large scale. By the beginning of March 1939 the state had contributed 1,869,235 kroner ($439,830), of which as much as 1,474,683 kroner ($346,993) had been spent on payments to farmers for the slaughter of 15,894 infected cattle. There are about 200,000 herds in Norway with some 1,328,000 head of cattle. Since 1935 the number of herds found to be infected

has been 3,014, and early in 1939 approximately 95 per cent of these herds had been cleared of the infection. There are still a few herds containing positive reactors but the number is being rapidly reduced. Dr. Thorshaug's program is now being held up in Denmark as a model to be followed in that country. Enormous losses have in the past been inflicted on the Norwegian farmer by infectious abortion, which now soon will be extinct.

COPENHAGEN

(From a Special Correspondent)

June 23, 1939.

Legislation on Abortion

The new pregnancy law of May 18, 1937, has come under such effective controversial fire that its application has been repeatedly postponed, on the last occasion to Oct. 1, 1939. Meanwhile the principles underlying this law continue to be debated. The framers of the new law have taken the precaution to eliminate all financial temptations from the doctor who has to decide whether an abortion should or should not be induced in a given case. This precaution means that abortions can be induced under the new law only in hospitals and similar institutions which are run by the state or the local authorities. At a recent meeting of the Danish Surgical Society the speaker traced the evolution of this problem during the past few years, noting that, as a rule, the large surgical and gynecologic hospitals in Denmark have adopted a reticent attitude, being far more conservative in their indications for the induction of abortion than a group of doctors whose ignorance of gynecology seems to have been no barrier to their enterprise as abortionists. According to the new law a woman may secure the termination of her pregnancy if it is considered necessary to save her life or to ward off danger to her health. With a law susceptible of elastic interpretation, it has seemed desirable that there should not only be no pecuniary advantage accruing to the doctor who induces the abortion but also that in doubtful cases two or more doctors of high standing should consult together before the final decision is taken.

The Campaign Against Gonorrhea

At Department H of the Rigshospital, in the charge of Professor Haxthausen, a system has been employed since September 1937 of making a routine search in the town for sources of infection with gonorrhea. The young men attending this outpatient department are questioned by a doctor, in the presence of no third person, about the conditions under which they believed infection took place. With the necessary practice, discretion and sympathetic interest, it has proved possible to elicit the desired information in most cases. Dr. Esbern Lomholt has collected the experiences of this department in the course of a year and has undertaken a statistical study of the 361 men who came to it suffering from recently acquired gonorrhea. In 202 cases they gave the names and addresses of women suspected of infecting them. Notices sent by the hospital to these women led to 177 of them coming to the hospital to be examined. Gonorrhea was found in 154 of them, i. e. in 87 per cent. This high percentage of positive results is in large measure a tribute to the value of routine culture tests for gonococci. Among seventy-six wives and sweethearts examined, as many as fifty were found to be suffering from gonorrhea which had presumably been contracted during the incubation period of the disease in their male partners before they came to the hospital.

Dr. Lomholt has failed to observe a single case of gonorrhea in which prophylactic measures had been effectively adopted. But what is the use of any prophylactic device when it is neglected or followed only half-heartedly by a man more or less under the influence of alcohol? Of 278 patients infected by casual intercouse with a known or unknown woman, practically all had consumed alcoholic drinks, and more than two thirds had been drunk in some degree. With only one exception, the patients were found to have some knowledge of venereal disease prophylaxis. Dr. Lomholt is therefore skeptical as to the value of educational propaganda for the public in this field, and he is more hopeful with regard to improvements in the diagnosis and treatment of gonorrhea and in the conditions enabling the patient to come under skilled treatment. In other words, advances in the knowledge of the doctor are likely to be more helpful than advances in the knowledge of the patient about this particular disease.

The Training of Young Surgeons

The young doctor who wishes to make a career for himself as a surgeon has to produce acceptable evidence of work in exclusively surgical hospital services when applying for a senior appointment. His work in a mixed hospital service counts little or not at all, however dominating the surgical activities and however subordinate the medical activities of such a service may be. This ruling means that the heads of provincial mixed hospital services cannot keep their first assistants for long; they pass on as soon as they can to a purely surgical service, deserting the head of the mixed service as soon as he has trained them and has learned to rely on them to act effectively in his absence. A hospital surgeon, Dr. Jacob Nordentoft, has lately protested against this state of affairs and has pointed out that though his service provides more than a thousand operations a year and ample facilities for surgical experience, the medical cases, to which he cannot refuse admission, act as a blight on his assistants' careers, though a certain mixture of medical among surgical cases should help to give perspective and promote accurate differential diagnoses. The remedy for this trouble should be simple enough in his opinion. It would be to create two distinct services in the same hospital, with a surgeon responsible for the surgical cases and a physician for the medical cases.

Marriages

HOWARD C. HIGH JR., Grand Rapids, Mich., to Dr. ANNE VIRGINIA LUFKIN of Northfield, Minn., June 19.

RICHARD WHITE HANCKEL JR., New York, to Miss Ruth Bernice Farmer at Salisbury, Conn., May 13.

DE WITT CORNELL DAUGHTRY to Miss Lucille Carr, both of Clinton, N. C., in Richmond, Va., June 3.

JAMES MADISON KENNEDY JR., Superior, Wis., to Miss Barbara Chesney of Pittsfield, Mass., June 3.

JAMES ROBERT THOMPSON, Miles City, Mont., to Miss Verneil Baird of Barberton, Ohio, in April.

HENRY WILLIAM TEN PAS, Clymer, N. Y., to Miss Edna Mae Mooi of Holland, Mich., June 19.

HANFORD LOUIS AUTEN, Topeka, Kan., to Miss Dawn Elaine Seavers of Bridgman, Mich., in May.

HARRY C. GOLDBERG, Perth Amboy, N. J., to Miss Mildred Gruessner of New Brunswick, June 7.

RUFUS JUDSON PEARSON JR., Miami, Fla., to Miss Emily Timmerman of Atlanta, Ga., May 20.

PAUL W. BOWDEN, Arlington, Va., to Miss Adelia Angel Kobelson of Pueblo, Colo., in April.

DONALD SHEPHERD GROVER to Miss Hilda Viola Anderson, both of Syracuse, N. Y., July 1.

JOHN FRANCIS SULLIVAN, Boston, to Miss Margaret Carr of Dorchester, Mass., recently.

JAMES S. LYONS, Albany, N. Y., to Miss Mary O'Brien of Hoboken, N. J., April 29.

FREDERICK R. SMITH, New Paris, Ohio, to Miss Wilma Price at Indianapolis recently.

JOHN DALE OWEN, Milwaukee, to Mrs. Jean C. Burkhart of Toledo, Ohio, May 23.

LESLIE M. BELL, Dozier, Ala., to Miss Marion Willard at Andalusia, June 7.

Deaths

Herbert Weston McLauthlin, Denver; Harvard University Medical School, Boston, 1882; member of the Colorado State Medical Society; professor of pathology and histology, 1884-1885, professor of obstetrics and diseases of women and children, 1885-1893, professor of materia medica, clinical medicine and therapeutics, 1893-1894, and professor of principles and practice of medicine, University of Colorado, 1894-1896; professor of therapeutics and materia medica, Colorado College of Dental Surgery, University of Denver, 1897-1930; commissioner of health of Denver, 1885-1887; on the staffs of the Denver General Hospital, St. Luke's Hospital, Mercy Hospital and St. Joseph's Hospital; aged 84; died, April 30, of myocarditis.

Birge Carlton Swift, Middleville, Mich.; Detroit College of Medicine, 1903; member of the Michigan State Medical Society; past president of the Barry County Medical Society; formerly village president and member of the school board; served during the World War; on the staffs of the Pennock Hospital, Hastings, St. Mary's Hospital, Grand Rapids and the Veterans Administration Facility, Battle Creek; aged 61; died, April 1, in Grand Rapids.

Lawrence Dade Alexander ✠ New York; University of Virginia Department of Medicine, Charlottesville, 1901; University and Bellevue Hospital Medical College, New York, 1902; member of the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; on the staff of the New York Eye and Ear Infirmary; aged 60; hanged himself, April 23, at Wilton, Conn.

Clarence Dunbar Hart ✠ Savannah, Ga.; Albany (N. Y.) Medical College, 1931; secretary of the Luce County (Mich.) Medical Society; member of the Michigan State Medical Society; councillor of the twelfth district of the Michigan State Medical Society; health officer of Savannah and of Chatham County; formerly district health officer at Newberry, Mich.; aged 43; died, April 9.

Albert Husted Rodgers, Corning, N. Y.; Albany (N. Y.) Medical College, 1896; New York Homeopathic Medical College and Hospital, New York, 1898; member of the Medical Society of the State of New York; formerly member of the board of health; served during the World War; on the staff of the Corning Hospital; aged 71; died, March 16, of heart disease.

Charles Porter Osteen, Sumter, S. C.; University of Nashville (Tenn.) Medical Department, 1892; member of the South Carolina Medical Association; past president of the Sumter County Medical Society; on the staff of the Tuomey Hospital; aged 72; died, April 14, in a hospital at Tampa, Fla.

George M. Studebaker, Erie, Pa.; Baltimore Medical College, 1896; member of the Medical Society of the State of Pennsylvania; for many years member of the city board of health; formerly on the staff of the Hamot Hospital; aged 72; died, March 9, of cerebral hemorrhage and arteriosclerosis.

Robert Calvin Cook, Springfield, Ill.; University of Louisville (Ky.) Medical Department, 1909; member of the Illinois State Medical Society; pediatrician of the division of child hygiene and public health nursing, department of public health; aged 57; died, April 13, of coronary occlusion.

Robert Chalmers Robe, Pueblo, Colo.; Rush Medical College, Chicago, 1895; member of the Colorado State Medical Society; formerly city and county physician; on the staff of St. Mary's Hospital; aged 75; died, April 1, in the Parkview Hospital of empyema and lobar pneumonia.

Hirsch Sadowsky ✠ Miami Beach, Fla.; Fordham University School of Medicine, New York, 1917; for many years on the staffs of St. Joseph's Hospital, Lebanon Hospital and Lincoln Hospital, New York; aged 55; died, April 2, of hypostatic pneumonia and cerebral hemorrhage.

Peter J. McHugh, Fort Collins, Colo.; Detroit College of Medicine, 1889; member and past president of the Colorado State Medical Society; past president of the Larimer County Medical Society; formerly mayor of Fort Collins; aged 75; died, April 5, of uremia and arteriosclerosis.

Charles Beaufort Jackson, Jasper, Ala.; Atlanta Medical College, 1886; member of the Medical Association of the State of Alabama; on the staff of the Walker County Hospital; aged 76; died, April 14, in the Baptist Hospital, Birmingham, of ulcer of the duodenum and uremia.

William Alfred Cerswell, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1901; M.R.C.S., England, and L.R.C.P., London, 1902; fellow of the American College of Surgeons; surgeon to the Grace Hospital; aged 61; died, April 30, of heart disease.

Adam William Schreiber ✠ Lafayette, Ind.; Washington University School of Medicine, St. Louis, 1903; served during the World War; aged 59; on the staff of the Lafayette Home Hospital, where he died, April 14, of ruptured appendix with abscess and coronary disease.

Hillis Delbert Rigterink, Grand Rapids, Mich.; University of Michigan Medical School, Ann Arbor, 1937; member of the Michigan State Medical Society; aged 26; on the staff of St. Mary's Hospital, where he died, April 19, of cholelithiasis and streptococcic peritonitis.

Isaac Warner Knight ✠ Pitman, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1903; past president of the Gloucester County Medical Society; district health officer; served during the World War; aged 56; died, April 10, of coronary embolism.

James McDonald Scott, Chicago; Rush Medical College, Chicago, 1896; on the staffs of the Mother Cabrini Memorial Hospital and the Frances Willard Hospital, now known as the Loretto Hospital; aged 73; was shot and killed, April 24, by an unknown assailant.

Charles Sumner Lane ✠ Hudson, Mich.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; aged 72; died, April 16, in the University Hospital, Ann Arbor, of cerebral hemorrhage and essential hypertension.

Thomas Eli Craig ✠ Sabina, Ohio; College of Physicians and Surgeons, Baltimore, 1892; past president of the Clinton County Medical Society; formerly member of the local board of education; aged 73; died, April 2, of mitral insufficiency and chronic hepatitis.

Walter James Irwin ✠ Cleveland; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1904; on the staff of the Glenville Hospital; aged 60; died, April 6, in the Mount Sinai Hospital, of hypertension and arteriosclerosis.

Jacob Osmund Lunn, Harbor Beach, Mich.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; member of the Michigan State Medical Society; aged 53; died, April 9, of a self-inflicted bullet wound.

Frazier N. Cloyd ✠ Danville, Ill.; University of Louisville (Ky.) Medical Department, 1893; on the staffs of the Lakeview and St. Elizabeth's hospitals; aged 70; died, April 18, of acute nephritis, hemolytic streptococcus sore throat and acute otitis media.

William Johnston, Hardy, Ark.; Kentucky University Medical Department, Louisville, 1903; member of the Arkansas Medical Society; past president of the Lawrence County Medical Society; aged 62; died, April 14, of coronary occlusion.

Samuel H. Miller ✠ Joplin, Mo.; Missouri Medical College, St. Louis, 1899; an Affiliate Fellow of the American College of Surgeons; on the staffs of the Freeman and St. John's hospitals; aged 77; died, April 8, of heart disease.

Edward William Phifer, Morganton, N. C.; North Carolina Medical College, Davidson, 1902; member of the Medical Society of the State of North Carolina; medical director of the Grace Hospital; aged 62; died, April 23, of heart disease.

Frank John Iuen, Kansas City, Mo.; Medical College of Ohio, Cincinnati, 1887; member of the Missouri State Medical Association; aged 76; died, April 14, in the Trinity Lutheran Hospital of chronic nephritis and prostatic hypertrophy.

Henry Wheeler McComas ✠ Oakland, Md.; University of Maryland School of Medicine, Baltimore, 1888; formerly mayor, county health officer and state senator; aged 74; died, April 10, of carcinoma of the prostate with metastasis.

Wallace C. Sarber, Argos, Ind.; Fort Wayne College of Medicine, 1896; member of the Indiana State Medical Association; aged 66; died, April 5, in the Parkview Hospital, Plymouth, of unresolved pneumonia and acute myocarditis.

Jay R. Douglas, Osawatomie, Kan.; Eclectic Medical University, Kansas City, Mo., 1914; Kansas City (Mo.) College of Medicine and Surgery, 1919; member of the Kansas Medical Society; aged 52; died, April 12, of heart disease.

Ralph Higgins Barker ✠ Derry, N. H.; Dartmouth Medical School, Hanover, 1900; past president of the Rockingham County Medical Society; aged 66; died, March 21, of bronchopneumonia and carcinoma of the intestine.

Clarence C. Bassett, Goodland, Ind.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1906; member of the State Medical Society of Wisconsin; served during the World War; aged 59; died, April 18, of coronary thrombosis.

Henry Ulysses Robinson, New York; Long Island College Hospital, Brooklyn, 1905; member of the Medical Society of the State of New York; aged 55; died, March 20, in the Mount Sinai Hospital of coronary thrombosis.

John Newell Holcomb ✠ Grand Rapids, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1902; served during the World War; aged 61; died, April 25, of coronary thrombosis and arteriosclerosis.

James Edward Hulett, Hattiesburg, Miss.; Cleveland Homeopathic Medical College, 1905; Barnes Medical College, St. Louis, 1906; aged 56; died, April 18, in the Methodist Hospital of acute intestinal obstruction.

James W. Crawford, Coldwater, Miss.; Vanderbilt University School of Medicine, Nashville, Tenn., 1877; formerly member of the state legislature; aged 86; died, April 13, of hypertension and intestinal hemorrhage.

George B. McClellan Reese, Brazil, Ind.; National Normal University College of Medicine, Lebanon, Ohio, 1893; at one time president of the board of health of Clinton; aged 69; died, April 11, of cerebral hemorrhage.

Edwin Membrace Trook, Marion, Ind.; Rush Medical College, Chicago, 1892; member of the Indiana State Medical Association; veteran of the Spanish-American War; aged 76; died, April 12, of heart disease.

Robert Ira Cole Prout ✠ Wakefield, Mich.; Northwestern University Medical School, Chicago, 1914; aged 54; died, March 7, in Minneapolis of cerebral hemorrhage, coronary heart disease and hypertension.

Daniel Maurice Mannix, Portland, Maine; Medical School of Maine, Portland, 1919; served during the World War; aged 44; died, March 9, in the Queen's Hospital of spontaneous subarachnoid hemorrhage.

James Lecompte Hooper, Baltimore; Southern Homeopathic Medical College, Baltimore, 1894; aged 69; died, April 25, in the Church Home and Infirmary of perforated gastric ulcer and arteriosclerosis.

Robert W. McConnell, Fort Blackmore, Va.; Kentucky School of Medicine, Louisville, 1894; aged 71; died, April 5, in the Holston Valley Community Hospital, Kingsport, Tenn., of cerebral hemorrhage.

Murray Smith Causey, Birmingham, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1925; member of the Medical Association of the State of Alabama; aged 38; died, April 17.

Irby Hammond Adams, Macon, Ga.; University of Georgia Medical Department, Augusta, 1902; member of the Medical Association of Georgia; aged 58; died, April 5, of pulmonary tuberculosis.

Lee J. Ernstberger, Louisville, Ky.; University of Louisville Medical Department, 1904; served during the World War; aged 62; died, April 16, at his winter home in Miami Beach, Fla., of heart disease.

Rosalie M. Ladova, Chicago; Northwestern University Woman's Medical School, Chicago, 1898; member of the Illinois State Medical Society; aged 65; died, April 5, of arteriosclerosis and diabetes mellitus.

De Witt Clinton Chadwick ✠ Washington, D. C.; Columbian University Medical Department, Washington, 1895; on the staff of the Garfield Hospital; aged 81; died, April 21, of pernicious anemia.

Robert Wilson Stearns, Medford, Ore.; Northwestern University Medical School, Chicago, 1909; served during the World War; aged 55; died, March 23, of malignant hypertension and uremia.

Horace Peter Mellus ✠ Brighton, Mich.; Detroit College of Medicine and Surgery, 1914; medical director of a hospital bearing his name; aged 51; died suddenly, April 18, in Detroit of heart disease.

Leo Robert Fitzgerald, Detroit; Marquette University School of Medicine, Milwaukee, 1915; for many years on the staff of the Providence Hospital; aged 52; died, April 10, of myocarditis.

Harry Bell Galatian, Catonsville, Md.; Jenner Medical College, Chicago, 1915; aged 59; died, April 17, in St. Peter's Hospital, New Brunswick, N. J., of appendical abscess and peritonitis.

Alfred William Baily, Tiffin, Ohio; Hahnemann Medical College and Hospital of Philadelphia, 1886; member of the New England Society of Psychiatry; aged 81; died, April 2, of influenza.

William L. McNaughten, Sedan, Kan. (licensed in Kansas in 1901); member of the Kansas Medical Society; formerly county health officer; aged 77; died, April 21, of heart disease.

Thomas Miller Yett, Austin, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1885; aged 81; died, March 30, of hypostatic pneumonia and fracture of the hip joint.

Ira Clayton Myers, Lakewood, Ohio; Eclectic Medical Institute, Cincinnati, 1922; aged 46; died, April 30, in the Fairview Park Hospital, Cleveland, of coronary thrombosis.

Henry LaFayette Long, Leesburg, Ga.; Atlanta College of Physicians and Surgeons, 1899; aged 71; died, April 16, in the Phoebe Putney Memorial Hospital, Albany, of uremia.

Franklin Benjamin Pearce, Eldorado, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1915; health officer; aged 64; died, April 26, of Addison's disease.

John H. Jackson, Marion, Ohio; Pulte Medical College, Cincinnati, 1878; member of the Ohio State Medical Association; aged 81; died, April 6, of chronic myocarditis.

William C. Barrett, Elizabeth, N. J.; Jefferson Medical College of Philadelphia, 1874; aged 90; died, April 28, in Springfield of chronic arteriosclerosis and nephritis.

Stokley David Hays, Flemington, W. Va.; Eclectic Medical College, Cincinnati, 1913; aged 57; died, April 21, of injuries received when his automobile was struck by a train.

William John Meyer, Springfield, Ill.; National Medical University, Chicago, 1907; aged 65; died, April 29, in St. John's Hospital of carcinoma of the intestine.

William Allen Campbell, Lexa, Ark.; University of the South Medical Department, Sewanee, Tenn., 1899; aged 66; died, April 17, of carcinoma of the stomach.

Zophar Mills Bardin, Logan, W. Va.; Medical College of South Carolina, Charleston, 1905; aged 57; died, April 24, in Fort Pierce, Fla., of cerebral hemorrhage.

William Bradford Casey, Norwich, Conn.; University of Maryland School of Medicine, Baltimore, 1906; aged 58; died, April 12, of carcinoma of the rectum.

Cullen P. Graves, Fort Worth, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1894; aged 77; died, April 17, of coronary occlusion.

Harlan Myron Page, Warren, Ohio; Jefferson Medical College of Philadelphia, 1892; aged 71; died, April 2, of arteriosclerosis and cerebral hemorrhage.

Archibald S. Lockhart, Southport, Ind.; Medical College of Indiana, Indianapolis, 1896; aged 68; died, April 13, of bronchopneumonia and myocarditis.

William Andrew Carter ✠ Trenton, Ill.; Cincinnati College of Medicine and Surgery, 1892; aged 72; died, April 30, of pneumonia and heart disease.

John L. Phillips, Pittsburgh; Jefferson Medical College of Philadelphia, 1883; aged 81; died, April 8, of mitral regurgitation and prostatic hypertrophy.

Arthur Bramwell Chapman, Pasco, Wash.; University of Oregon Medical School, Portland, 1923; aged 45; died, April 20, of subacute endocarditis.

Samuel Tipton Jarvis ✠ Woodbine, Ky.; University of Louisville School of Medicine, 1922; aged 51; died, April 4, of cerebral hemorrhage.

William W. Whittier, Elkins Park, Pa.; St. Louis College of Physicians and Surgeons, 1871; aged 88; died, March 29, of cardiorenal disease.

Charles L. Sturdevant, Atkinson, Neb.; Eclectic Medical Institute, Cincinnati, 1880; aged 80; died, March 22, of cardiovascular renal disease.

Edgar J. Miller, Romeo, Mich.; Detroit College of Medicine, 1899; served during the World War; aged 65; died, April 21, of myocarditis.

John Nathan Norris, Northport, Ala.; University of Nashville (Tenn.) Medical Department, 1909; aged 64; died, April 17, of myocarditis.

Robert E. Gramling, Atlanta, Ga.; Hospital Medical College, Atlanta, 1909; aged 61; died, April 14, of coronary occlusion.

Flora Sweet Alden, Boston (licensed in Massachusetts under the Act of 1894); aged 88; died, March 24, of heart disease.

Correspondence

SUBSIDIES FOR MEDICAL RESEARCH

To the Editor:—Daily I, along with thousands of other physicians, receive reprints of articles written by physicians but distributed by drug manufacturers or medical and surgical supply companies. The public press daily contains many articles recommending these medicines or appliances. It is now generally known that these articles and recommendations are frequently subsidized. Experience has demonstrated that too frequently the recommendations have been influenced by the subsidy.

In my opinion these concealed subsidies are a disgrace to our profession and should be declared unethical and suppressed in all quarters. If an article is published which reports investigations that have been subsidized by a company or an individual, a footnote should so state, along with the amount of the subsidy.

J. ARTHUR BUCHANAN, M.D.,
510 Ocean Avenue, Brooklyn.

URINARY CONCRETIONS AND SULFAPYRIDINE

To the Editor:—In the last issue of the *Proceedings of the Society for Experimental Biology and Medicine,* Antopol and Robinson (**40**:428 [March] 1939) and Gross, Cooper and Lewis (p. 448) reported that "urinary concretions" could be demonstrated in animals that had been given sulfapyridine. Several months ago, crystals were found by me in the urines of patients receiving this drug. A study on the effect of this drug on the urinary tracts of monkeys was in progress about the same time as that of the experimenters quoted. Similar results were obtained. Since my conclusions only confirm those of the authors quoted, the details of my experiments need not be related.

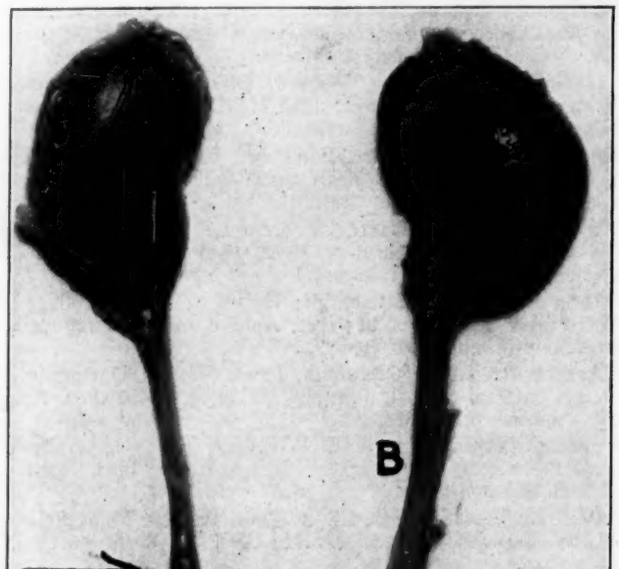

Fig. 1.—*A,* stone in enlarged ureter at arrow; *B,* dilated ureter.

At autopsy I found needle-like crystals and crystals in the form of sheaves similar to tyrosine crystals in the urine; concretions in the bladder, the ureter and the pelvis of the kidney; secondary infection of the bladder and ureters; dilatation of the pelvis of the kidney; pyelonephritis; markedly hyperemic swollen and enlarged kidneys, and hypertrophy and dilatation of the gallbladder and its ducts. Some of the stones found were large enough to occlude the ureters and the urethra. They were found in greatest number in the trigon area of the bladder but never in the gallbladder. During life there was a consistent decrease in the hemoglobin and in the total number of red cells.

The bladder of the experimental animals was occasionally found to be dilated and contained from 10 to 30 cc. of residual smoky urine which was bloody on gross and microscopic examinations. In THE JOURNAL, May 6, page 1820, Southworth and Cooke described hematuria as a complication following the use of sulfapyridine in human beings. Gerstenberger (*Tr. Am. Pediat. Soc.,* April 1939) reported that Fulton and his associates at the Babies and Childrens Hospital at Cleveland had encountered hematuria in five, or 18.5 per cent, of twenty-seven cases of pneumonia in children who had been treated with this drug. Lawrence (quoted by Antopol and Robinson) has also described hematuria. The sodium salt has been used in subsequent experiments with similar results (Toomey, J. A.; Reichle, H. S., and Takacs, W. S., in preparation).

Fig. 2.—*A,* enlarged hyperemic kidney; *B,* dilated stone-filled ureter; *C,* dilated gallbladder; *D,* slightly dilated ureter.

Fig. 3.—Type of stones obtained (magnification about 2 diameters).

It is believed that sulfapyridine should be used with care or not at all in treating patients who have nephritis or urinary retention secondary to prostatitis or paralyses and the like. I mention retention since I have found that one of the easiest ways to produce stones is to cause retention of the urinary bladder. This can be brought about in Macacus rhesus monkeys weighing from 3,000 to 5,000 Gm. by giving them experimental poliomyelitis, a condition often accompanied by dilatation of the bladder and retention. Five-tenths gram of sulfapyridine given such animals twice a day over a period of from five to seven days invariably causes the production of stones. The doses used are greater comparatively than those used in man; yet if the drug is used long enough the human dosage may approximate the totals used in animals. However, such large amounts would never be given to human beings in so short a period of time.

In THE JOURNAL May 13, page 1934, Wagner mentions the use of this drug in cases of poliomyelitis seen early in the

disease. It has been shown, however (J. A. Toomey and W. S. Takacs, in press) that this drug has no effect in preventing the experimental disease in Macacus rhesus monkeys even when it is given beginning four days prior to the onset of paralysis. In fact, because of the urinary retention often present in animals which have experimental poliomyelitis, the use of this drug may even aggravate the clinical condition, and the animals treated may succumb earlier than the controls.

It is sometimes believed that fewer complications follow the use of sulfapyridine than the use of sulfanilamide. This may be true as regards the number of complications, but the kind of complications that are now being described as occurring in experimental animals that have received this drug and the fact that it is excreted so erratically would make it one to be used with a great deal of caution. When it is employed, the urine should be examined twice and the blood once a day. If for any good reason it is administered to a patient with paralysis, especially to a person with signs of urinary stasis or retention, it should be used with extreme caution and the dangers appreciated.

JOHN A. TOOMEY, M.D., Cleveland.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TREATMENT AND PREVENTION OF POISON OAK AND POISON IVY DERMATITIS

To the Editor:—**Will you tell me the accepted idea as to the treatment of poison oak by injections and also the value of injections in prevention?**

M.D., Virginia.

ANSWER.—Reports on the efficacy of injections of rhus toxins for the treatment or prevention of dermatitis due to poison ivy, poison oak or poison sumac vary widely in the hands of different investigators. Among the many factors influencing the result of clinical investigation one should not overlook the mental one: the person who goes to the trouble of taking prophylactic treatment is much more apt to avoid contact with these plants. Although no conclusion can be reached until further evidence is available, in spite of the strong experimental testimony against the value of toxin treatment it seems impossible to discount wholly the testimony of clinicians that protracted cases of ivy dermatitis have cleared promptly after the toxin treatment was begun. Some reports also offer strong evidence that prevention is possible in a high percentage of susceptible individuals. A number of poison ivy and poison oak extracts have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies.

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VIABILITY OF TUBERCLE BACILLI—BUILDING DISINFECTION

To the Editor:—**A man with advanced and open pulmonary tuberculosis, recent owner of a small apartment hotel, has just vacated the building, in which he occupied one apartment and supervised the care of the bedding and the cleaning in others. He had constant access to the cellar containing elaborate piping, coal bins, stoker and several areas of dirt flooring; also to the hallway and the stairs, which are dark, damp and inaccessible to daylight or direct airing, with a temperature range between 60 and 70 F. The new owner with several small children in the family plans to occupy the vacated apartment with the children having more or less unavoidable access to the places described. Will any practical method of disinfection render the quarters safe for immediate occupancy by small children? Is any reliable information available as to the duration of viability of the bacillus of tuberculosis in the environment described? What part would lapse of time have in advice to the new owner under the present circumstances?**

M.D., Washington.

ANSWER.—Numerous studies have been made on the viability of tubercle bacilli under various atmospheric conditions. Cultures exposed to direct sunlight in summer are rendered sterile in about two hours. When sputum containing tubercle bacilli is spread thinly on glass and exposed to the direct sunlight in summer, the bacilli are destroyed in ten minutes. On clothing it may require as long as from twenty-four to thirty hours of direct sunlight exposure during the summer months to destroy them. Ultraviolet rays produced by the mercury quartz vapor lamp brought in direct contact with tubercle bacilli kills them in about ten minutes. When sputum containing tubercle bacilli is spread on cloth or glass and dried at a low temperature with only dim sunlight, the bacilli may be alive and virulent from two to four months later. When exposed to diffuse light, such as in the apartment mentioned, tubercle bacilli have been found virulent for nearly six weeks; but beyond two months the disease cannot be produced by introducing them into the bodies of guinea pigs.

Freezing apparently has little or no effect on the viability of tubercle bacilli. Even the temperature of liquid air maintained as long as eight days has not been found to kill bacilli in tuberculous lesions. Heat in a moist environment is effective; in fact, at 95 C. one minute suffices.

There is serious doubt whether fumigation of any kind is adequate in a building such as the one described. In the apartment actually occupied by the patient the best procedure would be to expose all the furniture and bedding to the direct rays of the sun for several days. If this cannot be done a mercury quartz vapor lamp might be used. Such lamps can be rented through physician and hospital supply houses. At a distance of 30 inches from the object, five minutes of this light is equal to about an hour of ordinary sunlight. It would be well to wash the floors and woodwork thoroughly with soap and water and also revarnish or paint them and redecorate the walls and ceilings. Of course, if the rooms are not occupied for approximately two months all bacilli will probably be dead as a result of exposure to indirect sunlight. In the other rooms and apartments where the patient came in contact with the bedding direct sunlight or ultraviolet rays from a special lamp would increase the safety if they are to be occupied immediately. Ordinary window glass obstructs ultraviolet rays of sunlight to a considerable extent and these are the most important germicidal rays.

The most difficult problem is in the cellar, where there is absence of sunlight. Here there is the possibility of bacilli remaining alive over a period of three or four months. To destroy them at once, one would be compelled to resort to ultraviolet rays produced by a special lamp.

TREATMENT OF SHORTENED LEG AFTER POLIOMYELITIS

To the Editor:—**What is the opinion on shortening the good leg in young persons with shortening of one leg due to infantile paralysis?**

H. G. Snyder, M.D., Seneca, Kan.

ANSWER.—In cases of infantile paralysis in children in which there is 1½ inches or more of shortening there are three methods of approach:

1. To lengthen the paralyzed leg after the manner of Abbott.
2. To shorten the sound leg by shortening the femur. This can be shortened as much as 2 or 2½ inches without great difficulty.
3. To put a short bone graft across the epiphysial line of the condyle of the femur, on the inner and outer aspects, and also on the head of the tibia. This operation results in early union of the epiphyses of these two bones and the result is about 2 inches of shortening, which occurs over a period of

about two years. Phemister devised this operation; it can be performed on children around the ages of 10 or 12 years.

For about sixteen or seventeen years Ober has been shortening the lower leg on the sound side. This is believed better than shortening the femur because it is easier to control. The shortening operation takes less time for recovery, and it is probably wiser to shorten the sound leg than it is to lengthen a paralyzed leg in which there is no muscle power. The one objection to shortening a sound leg is that patients often dislike having normal structures operated on for fear that something untoward may happen.

POISON OAK DERMATITIS

To the Editor:—**I have recently treated a man aged 45 for meningomyelitis which developed about a week after three injections of poison oak vaccine were given for a moderately severe case of poison oak dermatitis. I should like to know whether there are any cases reported in the literature in which, following poison oak vaccinations, inflammatory lesions of the spinal cord and meninges have developed. I should also like to know whether there have been cases reported of inflammation of the spinal cord and meninges following severe cases of poison oak dermatitis.**

M.D., California.

ANSWER.—A search of the literature has revealed no reference to cord or meningeal lesions following poison ivy or poison oak dermatitis or after the administration of the toxins of these plants for therapeutic purposes. In his book on the effects of these toxins, J. B. McNair (Rhus Dermatitis, Chicago, University of Chicago Press, 1923) mentions three fatal cases; but the original reports of these cases proved to be brief and without detail, except that one patient died at the end of the third week and another patient lingered with great suffering for two months and then died. The third case is given in even less detail: A man went to sleep in a patch of poison ivy and died as a consequence. Besides the dermatitis, fever, rapid pulse and respiration, constipation or diarrhea, albuminuria or suppression of urine, swollen lymph glands and insomnia are listed as symptoms of severe poisoning.

Severe irritation of the kidneys has been produced in laboratory animals. No symptoms suggesting involvement of the nervous system are mentioned.

CARE OF RABBITS IN PREGNANCY TEST: RABBITS FOR CANCER TEST

To the Editor:—**How long should female rabbits be isolated before being used for the Friedman test for pregnancy? How soon after a rabbit has been used for a Friedman test that gave a positive result can it be used a second time? How soon after a rabbit gives birth to a litter of young can it be used for a Friedman test? Should it be kept in a pen with other female rabbits or in a separate pen? Is it true that the odor of a male rabbit, as for instance in an adjacent pen separated by a wire partition, will produce corpora haemorrhagica in a female rabbit? I have recently heard of using twelve day pregnant rabbits in testing for a malignant condition. The story I heard was that urine from a patient who has cancer, when injected into the blood stream of such a rabbit, will cause the rabbit to abort. What evidence is there of the reliability of this test?**

L. A. Crowell Jr., M.D., Lincolnton, N. C.

To the Editor:—**A few weeks ago there was reported in the newspaper some observations made by the American Academy of Science in which a new test for carcinoma was described. This test was to inject a sample of urine from a patient into a pregnant rabbit. If the patient had carcinoma, the rabbit would abort. Is there any reasonable basis for this story?**

Warner Ogden, M.D., St. Paul.

ANSWER.—Female rabbits to be used for the Friedman test must be isolated from both males and other females for four weeks. The same length of time must be allowed to elapse after a rabbit has been used for a previous test and after pregnancy. This isolation is necessary because ovulation has been known to have been produced by the rabbit merely smelling a male penned close by or by being jumped on by another female. In order to obviate the possibility of obtaining false positive tests careful workers have adopted the modification of the Friedman test described by Schneider. In this procedure the previously isolated female is operated on and the ovaries are inspected immediately prior to the injection of the urine. In this way it is impossible to get a false positive reaction. Another safeguard that is used in certain laboratories makes the obtaining of a false negative reaction impossible: A small number of rabbits are known to be refractory to the anterior pituitary-like substances in pregnancy urine. In order that such refractoriness has not been responsible for the negative reaction obtained, every test that is negative is checked by injecting urine from a known pregnant woman into the same rabbit. If the second test is negative one is dealing with a refractory rabbit, and the test must then be repeated with another animal.

The test for cancer was reported by Elsasser and Wallace in *Science* (**89**:250 [March 17] 1939). These authors describe their test as a "selective action of urine and serum from patients with malignant tumors of embryonal and new growing tissues." The technic of the procedure is to inject 20 cc. of the patient's urine daily into the vein of a twelve day pregnant rabbit for four days. On the fifth day the rabbit will abort. Urine from patients with many types of cancers, teratoma of the testicle, dysgerminoma of the ovary and Wilms tumor all produced abortion. Control urines from normal and pregnant persons did not produce this effect. Serum from these same persons gave the same results.

The urine injected into these rabbits causes a progressive placental necrosis starting at the inner border of the decidual cells and advancing until it involves the entire embryonal mass. When this urine is injected into nonpregnant rabbits it produces degeneration of the graafian follicle, especially marked in the granulosa area. When it is injected into male rabbits the testicles undergo degeneration and the process of spermatogenesis completely disappears.

As a check on the test the authors injected a combination of 500 units of a solution of anterior pituitary-like substance and 20,000 units of estrogenic substance daily into pregnant rabbits without producing abortion.

This work appears to be well controlled and is interesting, but until reports from other observers and over a great number of cases are at hand it is not recommended as a diagnostic procedure.

TEMPERATURE OF DRINKING WATER

To the Editor:—**What should be the temperature of drinking water for men working at an indoor occupation, in this case, in a woodworking plant? The artesian tap water runs at about 68 F. The men are not satisfied with this water and claim it is too tepid. I have advised against the use of ice water and have suggested that the water should be at about 55 or 60 F. This is assuming that they drink as much water as they desire. Is the drinking of ice water under these conditions objectionable?**

H. R. Sugg, M.D., Clinton, Iowa.

ANSWER.—Most people in this country are conditioned to drink water so much cooler than the normal human body that a distinct and usually pleasant sensation of cold in the mouth, throat and esophagus is produced during and for a minute or two after such water drinking. This acts as a counterirritant, obscuring the sensation of thirst, and hence tends to produce the impression that the real thirst is stopped almost at once with cold water but not with tepid or warm water. The real need of the body for water is met by water within the temperatures not actually injurious to the mucous membrane of the digestive tract. There is no reliable evidence that "ice water" (water at from 37 to 50 F.) causes chronic injury to the alimentary tract. Taken in large quantities with a meal, it probably, through cooling, slows down gastric digestion for a few minutes. But this is probably of little practical significance. If taken in large quantities (from three to four glasses) and rapidly, water near the temperature of ice may induce, in addition to a painful cold sensation, a temporary spasm of the pharynx and esophagus as well as of the stomach, or even acute dilatation of the stomach in some people, especially when the body temperature is above normal, and as a consequence reflex excitability is somewhat increased. We eat ice cream, and the Eskimo eats frozen meat, without evident injury. So it seems that the temperature of ingested water is primarily a matter of habit and convenience, not a matter of health, and has no relation to a person's occupation.

TREATMENT OF ROUNDWORMS

To the Editor:—**A woman aged 45 has for four years had vomiting of roundworms. Only rarely does she pass any in the stools. She has had santonin, chiniofon, hexylresorcinol, ascaridol, and recently carbon tetrachloride. After she has taken these drugs she vomits several dead worms and passes a few also by rectum, but after a week or two vomiting of worms again commences. Due precautions have been taken against reinfestation. Can you suggest any further treatment?**

M.D., England.

ANSWER.—In the course of treating more than 3,000 cases of ascariasis with hexylresorcinol, in which egg counts were done both before and after treatment, several cases were said to be resistant to hexylresorcinol treatment. It was found however that, if these patients followed directions exactly, the parasites could be removed. In such cases it is necessary that the drug be given on an empty stomach in the morning following a light evening meal and that no food be taken for four or five hours after the treatment is given, although as much water as desired may be taken. A single treatment is usually sufficient, but in

special cases a second dose of hexylresorcinol may be given forty-eight hours later to insure success.

Crystalline hexylresorcinol must be used. The pills should be relatively freshly made. If given in crystalline form, the drug may be taken in hard gelatin capsules. Incorporating it in oil or any other vehicle will reduce, if not obliterate, activity.

Since treatment with hexylresorcinol is said to have been ineffective in this case, it would seem advisable to give a bismuth subcarbonate meal in order to determine whether or not the parasites might reside in some abnormal pocket of the intestinal tract. Since ascarids are known to ingest bismuth, such a meal might also locate the worms.

There is so much evidence that hexylresorcinol will kill ascarids if it comes in contact with them that it is probable that patients can be cured if every precaution is used to see for oneself that all details are attended to.

REVERSE QUECKENSTEDT TEST FOR SPINAL BLOCK

***To the Editor:*—What are the steps in doing a reverse Queckenstedt test in suspected spinal block?**

M.D., Connecticut.

ANSWER.—A reverse Queckenstedt test derives its designation because pressure is applied from below instead of from above the spinal puncture needle at the third lumbar interspace. This test is done to determine spinal block below the level of the spinal puncture; that is, below the third lumbar segment. The technic is as follows: A usual spinal puncture is done between the third and fourth lumbar interspaces with the patient on his side. A second spinal needle is inserted through the sacral hiatus and extended upward outside the dura (epidural space). After taking the initial pressure reading of the spinal fluid (spinal puncture needle at the level of the third and fourth lumbar interspaces) followed by readings of the pressure after coughing, straining, and light and heavy pressure on the jugular veins, one proceeds to make a study with the needle in the sacral hiatus. From 20 to 50 cc. of sterile physiologic solution of sodium chloride is injected into the epidural space through the needle in the sacral hiatus. If there is no block between the third lumbar and the end of the needle in the epidural space the pressure as measured in the spinal fluid needle will rise and the patient will experience no pain. If, however, there is a block the pressure will not rise or the rise will be slight and the patient will experience some pain in the lumbosacral region. If the latter occurs, one is able to conclude that there is a spinal block.

STATISTICS ON TUBERCULIN TESTING

***To the Editor:*—Could you tell me approximately how many tuberculin tests are run yearly on children in the United States? Approximately what percentage of the school population receives tuberculin tests? Do you know of any state or city health department that runs routine tuberculin tests in the schools? I am a medical student and am making a study of the field of tuberculin testing. I should appreciate it if you could supply me with this information. If you do not have these statistics available, could you tell me of some agency where I might obtain this information?**

J. D. Beatty, Chicago.

ANSWER.—Unfortunately there is no system of recording the number of tuberculin tests administered to children or the results of tests throughout the nation. It has been recommended that children and adults who react to the tuberculin test but present no other abnormality be reported to health departments for the purpose of tracing the infection to the source and also of making adequate periodic examinations of adult tuberculin reactors. So far this has not been generally accepted by state health departments, although there are communities and one or more cities where the health officers encourage the physicians to report the results of all tuberculin tests. Until such a method is adopted throughout the nation it will be impossible to obtain all the data desired.

The Tuberculosis Committee of the American School Health Association compiles as much information as possible each year on tuberculin testing of school children. This is done through the various state tuberculosis associations. The report of this committee for 1935 showed that 1,124,363 children were tested during that year. Since this report was only from the activities of the state tuberculosis associations and their component societies, it could by no means represent the total figure. In the offices of large numbers of physicians in the United States the tuberculin test has become a routine. Thus large numbers of tuberculin tests are administered by physicians in their offices which are never reported; in other words, they are used only for the physician's information with reference to the tuberculosis situation in the person being examined. Tuberculin testing of human beings is rapidly increasing in popularity and it appears that the time is not far distant when many millions of tests will be administered annually to school children. The current available figures can be obtained from the Tuberculosis Committee of the American School Health Association by addressing Dr. Charles H. Keene, 3335 Main Street, Buffalo.

GAS GANGRENE ANTISERUM IN RUPTURED APPENDICITIS

***To the Editor:*—What do you think of the administration of Clostridium welchii antiserum to patients found at operation to have a ruptured appendix?**

Frank B. Wisner, M.D., Ludlow, Mass.

ANSWER.—The practical importance of Clostridium welchii in patients with a ruptured appendix is uncertain. The development of that infection is rare. The administration of Clostridium welchii antiserum to a patient with a ruptured appendix would probably not be advised. The slight benefits that might possibly accrue from its use would doubtless be more than counterbalanced by sensitization to serum and possible allergic reaction.

HUSH AND MUM DEODORANTS

***To the Editor:*—Are you in receipt of any reports of the development of cutaneous irritation and lesions in the axilla following the use of such deodorants as Hush and Mum? During the winter I have had several students with enlarged axillary glands and others with eczematous eruptions which apparently followed the application of these preparations.**

Helen B. Todd, M.D., Bowling Green, Ohio.

ANSWER.—"Hush Cream" has been reported by one consumer organization to consist essentially of zinc oxide. No further information on it seems available.

"Mum" has been described as consisting essentially of fat, benzoic acid and zinc oxide. There is no evidence available at present to indicate that these preparations ever contained any aluminum or aluminum salts.

No responsibility for dermatitis should be attached to either of these preparations without a careful study of the case, for the only possibility of irritation from them would be a sensitization to the benzoic acid or to the fat in the ointment base, which are both rare occurrences. The observation that enlarged axillary lymph glands are noted following the use of deodorants is interesting but apparently no report of such effects appear in the literature.

Application in drugstores for "Hush Liquid Deodorant" was without result except for the answer that its manufacture has probably been discontinued, for the druggist had none in stock. It was said to contain 12.5 per cent of aluminum chloride, which, used unwisely, might cause a dermatitis on any skin.

INHERITANCE OF HUNCHBACK

***To the Editor:*—In *The Journal* of May 27 I note that an inquiry is made regarding the inheritance of hunchback, and in the answer it was stated that there was little likelihood of its inheritance. "Hunchback" is the layman's term for a deformity which may be the result of any one of a number of conditions. Tuberculosis or Pott's disease is certainly a common cause of this disorder, and it is known that tuberculosis is not inherited, although the tendency to contract it may be. Poliomyelitis, rickets, organic scoliosis, epiphysitis and many other bone disorders may cause a marked kyphosis. The Marie-Strümpell type of arthritis may cause a gradual rounding of the spine. The accompanying illustration shows a man aged 31 with this disorder who states that his father and two uncles had the same condition, while two of his uncles had no deformity. One brother has no deformity, another had marked rounding of the shoulders and three have moderate rounding. Two of his half sisters were slightly round shouldered and a third half sister was quite round shouldered. Thus in this case the condition seems hereditary.**

John W. Ghormley, M.D., Albany, N. Y.

Man with hunchback whose father and two uncles had the same deformity.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, July 8, page 169.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Medical centers having five or more candidates desiring to take the examination, Sept. 11-13. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th Street, Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Written.* Various places throughout the United States, Sept. 9. *Oral.* Part II. Philadelphia, Oct. 14-15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: *Written.* Various large cities in the country, Oct. 9. *Applications must be received by the Secretary by Sept. 1. Oral.* Philadelphia, Nov. 3-4. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Various sections of the United States, Oct. 16 and Feb. 19. Formal application must be received before Aug. 20 for the Oct. examination and on or before Jan. 1 for the Feb. examination. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination and review of case histories (Part I) for Group B candidates* will be held in various cities of the United States and Canada, Dec. 2. *Applications for admission to Group B, Part I, examinations must be on file not later than Oct. 4. General oral and pathological examinations (Part II) for all candidates (Groups A and B)* will be conducted in Atlantic City, N. J., June 6-8. *Applications for admission to Group A, Part II examinations must be* on file not later than March 15. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* April 6. Formal application must be received before January 1. *Oral.* Chicago, Oct. 7 and New York, June 10. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Boston, January. *Applications must be filed on or before Nov. 1.* Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 6-7. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: Memphis, Nov. 22-23. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, December. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlanta, Ga., Dec. 9-11. Sec., Dr. Byrl R. Kirklin, 102-110 Second Avenue S.W., Rochester, Minnesota.

AMERICAN BOARD OF SURGERY: *Part I (Written).* Simultaneously in various centers throughout the United States, Oct. 9. *Applications must be received by the Secretary not later than Aug. 15.* Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

Missouri Reciprocity and Endorsement Report

Dr. Harry F. Parker, secretary, State Board of Health of Missouri, reports five physicians licensed by reciprocity and two physicians licensed by endorsement at the meeting held at St. Louis, May 31, 1939. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1937)	Tennessee
University of Kansas School of Medicine		(1938)	Kansas
University of Nebraska College of Medicine		(1903)	Nebraska
University of Tennessee College of Medicine		(1937)	Tennessee
Medical College of Virginia		(1936)	New Jersey

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
New York Medical College and Flower Hospital		(1936)	N. B. M. Ex.
University of Pennsylvania School of Medicine		(1934)	N. B. M. Ex.

Alabama Reciprocity and Endorsement Report

Dr. J. N. Baker, secretary, Alabama State Board of Medical Examiners, reports twenty physicians licensed by reciprocity and four physicians licensed by endorsement from Jan. 12 through June 5, 1939. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Atlanta College of Physicians and Surgeons, Georgia		(1911)	Georgia
Rush Medical College		(1936)	Indiana
Louisiana State University Medical Center		(1936)	Georgia
Tulane University of Louisiana School of Medicine		(1935)	Mississippi, (1933), (1937, 2) Louisiana
Johns Hopkins University School of Medicine		(1930)	Maryland
Harvard Medical School		(1935)	Penna.
Tufts College Medical School		(1933)	Illinois
New York University College of Medicine		(1936)	New York
Ohio State University College of Medicine		(1937)	Ohio
Western Reserve University School of Medicine		(1935)	Ohio
Hahnemann Medical College and Hosp. of Philadelphia		(1937)	Maryland
University of Tennessee College of Medicine		(1914)	Mississippi, (1935) Tennessee
Vanderbilt University School of Medicine		(1935)	Tennessee
University of Texas School of Medicine		(1937)	Texas
Medical College of Virginia		(1937)	Virginia
University of Virginia Department of Medicine		(1938)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of California Medical School		(1937)	N. B. M. Ex.
Duke University School of Medicine		(1936), (1937)	N. B. M. Ex.
Licentiate of the Royal College of Physicians and of the Royal College of Surgeons, Edinburgh, and of the Royal Faculty of Physicians and Surgeons, Glasgow		(1934)	N. B. M. Ex.

Wyoming February Report

Dr. G. M. Anderson, secretary, Wyoming State Board of Medical Examiners, reports the written examination held at Cheyenne, Feb. 6, 1939. The examination covered eleven subjects and included 100 questions. An average of 75 per cent was required to pass. Two candidates were examined, one of whom passed and one failed. Two applicants were licensed by reciprocity and one applicant was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Jefferson Medical College of Philadelphia		(1933)	85

	FAILED	Per Cent
Osteopath*		63.6

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Wisconsin Medical School		(1936)	Wisconsin
Osteopath†			Kansas

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1928)	N. B. M. Ex.

* Examined in osteopathy and surgery.
† Licensed to practice osteopathy and surgery.

Puerto Rico March Report

Dr. O. Costa Mandry, secretary, Board of Medical Examiners of Puerto Rico, reports the written and practical examination held at San Juan, March 7, 1939. The examination covered sixteen subjects and included 160 questions. An average of 75 per cent was required to pass. Five candidates were examined, all of whom passed. One physician was licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Bennett College of Eclectic Med. and Surgery, Chicago		(1908)	78.2
University of Maryland School of Medicine and College of Physicians and Surgeons		(1929)	81.8
Université de Montpellier Faculté de Médecine		(1936)	79.7
Université de Paris Faculté de Médecine		(1937)	79
Université de Lausanne Faculté de Médecine		(1936)	80

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Medical College of Virginia		(1932)	New York

Kentucky Reciprocity and Endorsement Report

Dr. A. T. McCormack, secretary, State Board of Health of Kentucky, reports twenty-three physicians licensed by reciprocity and one physician licensed by endorsement from Jan. 18 through June 17, 1939. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Georgia Medical Department		(1922)	Georgia
Rush Medical College		(1937)	Illinois
School of Medicine of the Division of the Biological Sciences		(1936)	Ohio
State University of Iowa College of Medicine		(1935)	Iowa
University of Louisville Medical Department		(1910)	Tennessee
University of Louisville School of Medicine		(1937)	W. Virginia
Tulane University of Louisiana School of Medicine		(1935)	Louisiana
Johns Hopkins University School of Medicine		(1932)	Maryland
St. Louis University School of Medicine		(1928)	Missouri
University of Nebraska College of Medicine		(1933)	Nebraska
Duke University School of Medicine		(1933)	Arizona
Eclectic Medical College, Cincinnati		(1938)	Ohio
University of Cincinnati College of Medicine		(1921), (1936, 2), (1938, 2)	Ohio
University of Tennessee College of Medicine		(1932)	Oklahoma, (1935) Tennessee
Vanderbilt Univ. School of Medicine		(1924), (1931), (1937)	Tennessee
Medical College of Virginia		(1938)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1938)	N. B. M. Ex.

Book Notices

Alcohol in Moderation and Excess: A Study of the Effects of the Use of Alcohol on the Human System. By J. A. Waddell, M.D., Professor of Pharmacology, Materia Medica and Toxicology, Medical Department, University of Virginia, Charlottesville, and H. B. Haag, M.D., Professor of Pharmacology, Medical College of Virginia, Richmond. In collaboration with Committees from the Faculties of the State-Supported Medical Schools of Virginia. Cloth. Price, $1. Pp. 184, with 32 illustrations. Richmond, Virginia: William Byrd Press, Inc., 1938.

This volume on the effects of alcohol on the human system was prepared by members of the faculties of the medical schools of the two state supported universities of Virginia at the express direction of the general assembly of that state. The text and illustrations clearly and judiciously summarize for the benefit of teachers and other especially intelligent laymen available information regarding the effects of alcohol. Further simplification, explanation, interpretation and popular illustration would be necessary to bring the material within the range of the average reader or school child. "A moderate drinker" is defined as "a person who does not consume a sufficient quantity to noticeably affect his behavior or alter his reflexes. It corresponds to about 0.01% in the blood." The consumption of 1 ounce (30 cc.) of whisky or one bottle of beer, suggested for such drinkers, although only a third of "Anstie's limit," would, according to Grehant's rule, yield several times the level of alcohol in the blood designated in persons without increased tolerance. For such "moderate drinkers" most of the recognized ill effects of alcohol in excess are questioned, although "it is dangerous to operate a car after one has been drinking, even in moderation." The ill effects of alcohol in excess, making its drinker "a menace to himself and to others," are demonstrated, in spite of the unsettled state of certain questions. The social, moral, political and economic aspects of the alcohol are avoided, and the medical aspects particularly are presented.

Das C-Vitamin-Problem in der menschlichen Ernährung. Von Universitätsprofessor Dr. med. et phil. Georg von Wendt. Unter Mitwirkung von Universitätsprofessor Hofrat Dr. Wilhelm Müller-Lenhartz. Boards. Price, 2.50 marks. Pp. 70, with one illustration. Leipzig: Georg Thieme, 1939.

Professor Wendt of Helsingfors is well known for his classic contributions to the knowledge of mineral metabolism. In the present volume he has collaborated with Professor Müller-Lenhartz of Leipzig to discuss various phases of the problem of vitamin C in nutrition. There are five chapters in addition to the foreword. These discuss the nature of vitamin C, the determination of vitamin C and vitamin C requirements, the vitamin C requirements of man and the actual vitamin C intake. The authors point out that the vitamin C intake of people in northern Europe is variable but usually low. During the summer months it increases of course, because of the greater consumption of fresh fruits and vegetables. Various foods are tabulated as sources of vitamin C. It is apparent from the data provided that none of the foods are as rich as leaves in this vitamin. The authors state as their opinion that increasing the vitamin C intake will be found useful in decreasing the incidence of endemic goiter and of tuberculosis.

Cholesterol Content of the Red Blood Cells in Man. By Georg C. Brun. Translation from Danish by Hans Andersen, M.D. Denne Afhandling er af det lægevidenskabelige Fakultet antaget til offentlig at forsvares for den medicinske Doktorgrad, København. Paper. Pp. 237, with 11 illustrations. Copenhagen; NYT Nordisk Forlag, Arnold Busck; London: H. K. Lewis & Co., Ltd., 1939.

To research workers and clinicians this book presents in extreme detail the author's investigations on the significance of the cholesterol content of the red blood cells in man. An excellent review of previous work is given together with a criticism of existing analytic procedures. The author has worked out a modified method which is apparently reliable and which is presented in such detail as to be easily followed by any worker in this field. The fact is demonstrated that, in heparinized blood, lipoid extracts will usually be incomplete unless the hematocrit value is reduced by dilution. It is pointed out that previous values for the cholesterol content of the red cells in man are at extreme variance because of the use of unreliable analytic procedures. Hence the author has established normal values for fifty-eight subjects and treated the data statistically. Normal values as they vary during a month are given as well as the diurnal variation in normal man on an ordinary diet. The observation is made that no change takes place during the day or during several days, including the postabsorption period following meals. These values obviously differ from the plasma values. Finally, studies were carried out on patients to determine whether or not a variation might be observed which could be used in a diagnostic or prognostic way. A group of nonjaundiced cancer patients were studied and compared with a group of jaundiced patients with the observation that it was not practical to demonstrate any relation between the increased cholesterol content of the red blood cells in the jaundiced patient with cancer and some definite feature of the disease in question. In every case, irrespective of the cause of the jaundice, there was an increase in the cholesterol content of the red blood cells, and the suggestion was made that this might be ascribed to the jaundice itself and not to any parenchymatous changes in the liver. There appeared to be no relation between the increase of red cell cholesterol and the site of the cancer in the organism. Tables, charts and case reports present all the data in minute detail. This work represents an extremely valuable addition to the question of lipoid metabolism in disease, and because the work was so well controlled and is presented in such detail it should be of value to research workers in this field.

The Distribution of Leucocytes in the Vascular System. By Gert Vejlens. Inaugural Dissertation, Upsala. Published in Acta Pathologica et Microbiologica Scandinavica as Supplementum XXXIII, 1938. Paper. Pp. 239, with 54 illustrations. Upsala: Almqvist & Wiksells Boktryckeri-A.B., 1938.

In the author's original research on the distribution of the white blood corpuscles within the vascular system the neutrophils and eosinophils but not the lymphocytes were observed to become adherent to the walls of paracapillary veins under certain conditions. Paracapillary vessels are defined as vessels from 0.02 to 0.30 mm. in diameter. A decrease in the velocity of blood flow and an increase in the fibrinogen content of the blood favor this accumulation of leukocytes in the paracapillary veins. Increasing the velocity of the blood flow or decreasing the fibrinogen content may permit release of these leukocytes again. Experimental evidence is presented to indicate that the marginal position of the leukocytes is due to aggregation of the erythrocytes by the factors which tend to produce a rapid sedimentation rate and to the hydrodynamics of the circulation in vessels of this diameter. The author believes that this explains the inaccuracies of counts done on blood obtained by puncture of the skin and the sudden fluctuations in counts affecting chiefly the cells of the granulocyte series, which are termed pseudoleukopenias and pseudoleukocytoses. The book should prove of interest to any one concerned with the physiologic basis of alterations in the leukocyte and red cell counts in the blood. The studies lend further support to the accumulating evidence that hematologic studies of blood obtained from the vein are more accurate than those made on blood obtained by puncture of the ear or finger.

Short-Wave Therapy: The Medical Uses of Electrical High Frequencies. By Dr. Erwin Schliephake, Dozent at the University of Giessen. With foreword by Elkin P. Cumberbatch, M.A., M.B., B.Ch. Authorized English translation by R. King Brown, B.A., M.D., D.P.H., from the third German edition. Second English edition. Cloth. Price, 21s. Pp. 296, with 148 illustrations. London: Actinic Press, Ltd., 1938.

This English translation of Schliephake's third German edition not only is increased in size but contains a technical contribution by Rhode and an index, both of which were omitted in the first translation. Schliephake's concept that short wave therapy, in which he is an acknowledged pioneer, is a method entirely independent of classic diathermy, is not shared by many other authorities. This concept perhaps explains his rather acrimonious attitude of denying particular credit to the epochal labors of the French savant d'Arsonval in the face of the historical fact that without his fundamental labors in the field of electrophysiology there would be neither diathermy nor short wave therapy. In a foreword by Cumberbatch is presented the conservative attitude of British workers, who hold the pragmatic view that deep heating is the distinctive feature of this measure of physical therapy, but at the same time he leaves a loophole for the admission of a selective action of the current on "colloidal molecules and molecular complexes." It is somewhat

astonishing that Cumberbatch laments the lack of means to measure doses exactly, when as a matter of fact facilities for dosimetry have been created, as should have been evident to him from the literature.

The text proper reveals an undesirable effort to reproduce the German idiom too literally, which is attained at the expense of good English diction and stylistic fluency. There is also a certain looseness about some data and their chronology. Thus in the mention of the labors of Gosset, Gutmann and Lakhowsky, the name of their co-worker Magrou is conspicuous by its absence, while the date of their publication is given as 1934, when as a matter of fact it appeared a decade before. Even the title of Schliephake is still listed as dozent, when the German original shows him to have been promoted to the titular grade of professor.

In spite of these shortcomings, omissions and errors, the present edition is more informative than its predecessor, with the contents manifesting better organization. While it does not fully measure up to the standard set by several publications on this subject in English, the circumstance that it reflects the latest ideas of Schliephake renders the volume of considerable interest to students of short wave diathermy.

Avian Tuberculosis Infections. By William H. Feldman, D.V.M., M.S., Associate in Division of Experimental Medicine, Institute of Experimental Medicine, Rochester, Minn. Cloth. Price, $7. Pp. 483, with 109 illustrations. Baltimore: Williams & Wilkins Company, 1938.

This book is written by one who has much first hand knowledge of the subject. He has done a great deal of scientific and practical work and published many articles. Indeed, most of the illustrations are from his own work. The book fills a great need. Prior to its appearance there was much confusion in the minds of many persons concerning the significance of the avian type of tubercle bacillus. The literature was so voluminous that only a few persons had time to read it and screen out the important facts. Dr. Feldman has brought together all the important information with a long list of references at the end of each chapter. Thus there is available in this volume all that is definitely known about avian tuberculous infections.

Most readers will be amazed to find that the chickens of this nation are valued at $200,000,000 and that the chicken industry represents an annual value of nearly $2,000,000,000. The disease of chickens which is most widespread and one of the most important economically is tuberculosis.

In chapter I a splendid historical sketch is presented concerning our knowledge of the avian type of tuberculosis, with such facts as the discovery by Rivolta in 1889 of a difference between bovine tuberculosis and tuberculosis in chickens. Chapter II is devoted to the biologic characteristics of the avian type of tubercle bacillus. In this chapter alone 167 references are given.

Under diagnosis Dr. Feldman says: "The method of choice for determining the presence of tuberculosis in the living chicken is the intradermal tuberculin test. The specificity of the test can quickly be determined by necropsy." Excellent chapters are included on the pathologic anatomy and experimental tuberculosis in chickens. In the chapter on pathogenicity of avian tubercle bacilli for fowl other than chickens, the author points out that turkeys often contract the disease, in most instances from infected chickens. Parrots frequently acquire tuberculosis, in most cases from the human type of bacillus although at times from the bovine and avian types. Waterfowl, such as ducks, geese and swans, rarely become tuberculous.

In the chapter on pathogenicity of avian tubercle bacilli for cattle and swine the author points out that cattle will become sensitive to tuberculosis after exposure to tuberculous chickens, although such sensitivity is transitory and dependent on continuation of the exposure. Under ordinary conditions of natural exposure, however, avian tubercle bacilli have but limited pathogenicity for cattle. Although swine are infected by human and bovine types of tubercle bacilli, the avian type of infection is by far the most common in this country, where the losses from tuberculosis caused by avian tubercle bacilli in swine approximate $2,000,000 annually.

Feldman has definitely settled the controversy over the pathogenicity of avian tubercle bacilli for human beings. He has assembled all the reports possible of cases of avian tuberculosis in man from the world's literature and has presented them in considerable detail in chapter XI. Analysis of the data in thirty-seven such cases exclusive of instances of Hodgkin's disease indicates that in only thirteen were the data sufficiently convincing to establish the presence of the avian tubercle bacillus with reasonable certainty. In approximately fifty cases of Hodgkin's disease in which attempts had been made to demonstrate avian tubercle bacilli, no satisfactory proof was found that this disease is related etiologically to avian tuberculosis. Feldman suggests that the human body has a formidable resistance to the avian type of tubercle bacillus and that therefore it is only the exceptional individual who becomes infected with this organism. For transmission to human beings Feldman believes the more likely sources are eggs from tuberculous chickens, carcasses of tuberculous swine and poultry and contaminated milk.

Chapter XII is devoted to tuberculin and the tuberculin test. In testing chickens a 50 per cent solution of avian tuberculin is injected intracutaneously into the wattle. Only 2 or 3 per cent of the chickens which react to this test do not show gross lesions at necropsy. Feldman expresses the opinion that inability to find the lesions does not prove their absence, since some may be so small that they are not seen with the naked eye. He says: "If a tuberculin of high potency is used and the injections are made properly, characteristically positive reactions are highly specific and, until proved otherwise, indicate a tuberculin sensitivity induced by tubercle bacilli regardless of whether or not morbid changes can be found." Emphasis is placed on the fact that tuberculin made from the avian type of tubercle bacillus results in more reactions when the animal is infected with avian bacilli than when tuberculin is made from the mammalian type of tubercle bacilli. Therefore avian tuberculin should always be used for testing chickens. Feldman's personal experiences have convinced him that acid-fast bacteria other than those which are pathogenic for mammals or fowl are not likely to produce a recognizable sensitivity to tuberculin in chickens.

In the final chapter, devoted to the dissemination and control of avian tuberculosis, the author states that, even though only a few authentic cases of avian tuberculosis in man have been reported, the subject is not a closed one and further investigations are indicated. Every possible attempt should be made to eradicate the disease from chickens, which in turn would quickly lead to the control of the disease in swine. Various methods of eradicating the disease from chickens are described. Under the subject of vaccination with B C G he says: "As a means of suppressing tuberculosis among chickens it is obvious that vaccination cannot be recommended."

Since the public is rapidly becoming interested in tuberculosis and the physician is frequently asked questions, it behooves him to be informed or have readily available information on the various types of tubercle bacilli and the disease they cause in various animals and man. This information and much more is to be found in Feldman's book; therefore it should become a part of every physician's library.

La ponction sternale: Procédé de diagnostic cytologique. Par P. Émile-Weil, médecin des hôpitaux de Paris, et Suzanne Perlès, chef de laboratoire à l'Hôpital Tenon. Paper. Price, 75 francs. Pp. 183, with 25 illustrations. Paris: Masson & Cie, 1938.

The authors have previously published a creditable monograph on splenic puncture, and this treatise is concerned exclusively with sternal puncture. They point out, however, that the employment of sternal puncture without examination of other hemopoietic centers may give an incomplete picture in many diseases. The practical and scientific value of sternal puncture is clearly indicated. The introductory chapter is concerned with the technic of sternal puncture and methods of staining the aspirated material. The next chapter deals with the cells which compose the myelogram. This chapter is beautifully illustrated with three full page colored plates. The second part of the monograph deals with the pathologic myelogram in disorders of the blood-forming organs, infections, tumors and granulomas. Concise chapters deal with the observations made by sternal puncture in conditions associated with hepatomegalies, splenomegalies and adenopathies. The monograph is concisely written and well edited. It is beautifully illustrated with colored and black and white illustrations. A concise but adequate bibliography is appended.

Accidents du travail: Accidents de droit commun, invalidités de guerre, maladies professionnelles. Guide pour l'évaluation des incapacités. Par Léon Imbert. Avec la collaboration du Dr. Jean Sédan, ophthalmologiste des hôpitaux. Third edition. Paper. Price, 80 francs. Pp. 544, with 84 illustrations. Paris: Masson & Cie, 1939.

Primarily this publication represents a guide for the evaluation of disability after industrial accidents. Emphasis is placed on the contention that industrial accidents present special surgical features unlike those characterizing the surgery of warfare or the surgery of automobile accidents. A large portion of this book well portrays the unusual medical, surgical and legal features of industrial accidents, together with the industrial aspects of arthritis, heart disease, diarrhea, goiter and venereal diseases. While the subtitle suggests that occupational diseases are embraced, only meager presentations occur, so that the book cannot be sponsored as representing adequate coverage of trade diseases. Its chief worth is in relation to industrial fractures, amputations, mutilations, paralyses and injuries of tendons and muscles. Various sections are devoted to laws, decrees, expert testimony and preparation of reports, all of which would be valuable in French courts and in French insurance matters but are of restricted application in the United States. Apparently because of poor proof reading and organization, chapter headings appearing in the text do not coincide with statements appearing in the table of contents.

Chemie und Technik der Gegenwart. Herausgegeben von Dr. H. Carlsohn, Professor an der Universität Leipzig. Band XX: Vitamine und Hormone und ihre technische Darstellung. Teil 2: Darstellung von Vitaminpräparaten. Von Dr. Franz Seitz. Boards. Price, 10 marks. Pp. 205. Leipzig: S. Hirzel, 1939.

This book is a brief compilation of the chemistry of the important vitamins from the point of view of the pharmaceutic manufacturer. Various preparations of importance are described, with the methods of manufacture or synthesis and fairly complete citation of the patent literature. For persons interested in this field the volume will be indispensable. The vitamins discussed include A, carotene, D, E, K, B_1, B_2, other factors of the B complex, C and H. There is also a discussion of vitamin rich preparations and vitamin containing foods, accompanied by brief descriptions of important patents covering the preparations or processes.

Studien über das Vitamin A beim Menschen. Von Torsten Lindqvist, aus der medizinischen Klinik des Universitätskrankenhauses zu Uppsala. Acta medica scandinavica, Supplementum XCVII. Paper. Pp. 262; 52. Uppsala: Appelbergs Boktryckeriaktiebolag, 1938.

The author has made an extensive study of vitamin A in relation to human nutrition, and the present volume provides an account of these investigations. The first portion of the book includes a discussion of the chemistry of vitamin A and methods for the determination of vitamin A and of carotene. The account of the investigation includes chapters about (1) introduction and statement of the problem, (2) night blindness as a sign of vitamin A deficiency, (3) review of investigagations of night blindness in large groups, (4) the present investigation, (5) statistical methods, (6) methods and review of earlier investigations on the assimilation of carotenoids and vitamin A in the blood, (7) investigation on the assimilation of carotenoids and vitamin A in the blood serum, (8) relationship between the threshold of light perception and the vitamin A content of the serum, (9) relationship between the vitamin A content of the serum and minimum distinguishable light, (10) vitamin A in the serum of persons with high intakes of vitamin A, (11) the vitamin A content of blood as a measure for establishing vitamin A standards of an individual or groups and (12) review of various methods for estimating the vitamin A requirements of man.

The second part describes an investigation of the importance of vitamin A in various diseases and includes chapters about (13) a foreword to the second portion of the book, (14) infectious diseases, (15) diseases of the digestive system, (16) diseases of the liver, (17) endocrine disturbances, (18) disorders of the kidneys, (19) vitamin A in the urine, (20) the estimation of carotenoids and vitamin A in the liver and total cholesterol in the serum and (21) summary. There is a complete bibliography.

The third part of the monograph provides tables of values observed in different cases. A total of 380 persons were examined. In general it was concluded that in persons with night blindness the carotenoid content of the blood serum ranges from about 4 to 38 micrograms per hundred cubic centimeters. The vitamin A content, in terms of international units per hundred cubic centimeters, ranges from about 40 to 239. In 291 patients without defects in light adaptation and in twenty-five healthy persons the carotenoid content ranged from 6 to 118 and from 22 to 114 micrograms per hundred cubic centimeters respectively. The vitamin A content of the blood serum in terms of international units per hundred cubic centimeters ranged from 69 to 548 for the patients and from 138 to 347 for the healthy persons. During the infectious diseases the values for both carotenoids and vitamin A in the blood serum were low.

Verständliche Wissenschaft. Band XXXIX: Nahrung und Ernährung: Altbekanntes und Neuerforschtes vom Essen. Von Dr. Hans Glatzel, Dozent an der Christian-Albrecht-Universität in Kiel. Cloth. Price, 4.80 marks. Pp. 256, with 25 illustrations. Berlin: Julius Springer, 1939.

Although it is an elementary account of the old and new knowledge of foods, this book contains a tremendous amount of information. There is a brief presentation of the principles of nutrition followed by a discussion of the various components of the diet. The book contains a brief discussion of foods and an account in a philosophic vein of the changing diet in Germany during the last hundred years. The brevity of the book is accomplished in part by an adaptation of the question and answer style of discussion, many of the paragraphs consisting of a question and the answer in the light of existing knowledge. The numerous illustrations provide interesting comparisons of the composition of different types of food and other items. The charts are made more forceful by illustrations. Thus in the chart showing the variation of the vitamin A content of cow's milk there is placed along the abscissa at the bottom various diagrams showing a cow in a stall during the winter months and then at pasture during spring and summer, when the vitamin A content of the milk is increased. A graph is introduced to show the decrease of vitamin C content in the cooking of cabbage, and there are drawings of cabbage being cooked in a pot to accompany the chart. To show the differences in the length of time that certain types of food remain in the stomach, various articles of food are pictured with the figure of a clock to show that each is ingested at the same time. Below each food there is another clock showing when that food would be eliminated from the stomach. The discussion of the food of man is prefaced by an illustration of the structure of the teeth of typical carnivorous and vegetarian animals as compared with the teeth of man. An interesting chart shows the relative intakes of different peoples as compiled by the League of Nations. There is also a chart showing a comparison of home produced and imported foods consumed in present day Germany. It is interesting to note from this graph that nearly all the sugar used in Germany is obtained from within its own boundary, probably as beet sugar. There are at the end of the volume a brief glossary of terms and also a few references to the literature on the subject of foods and nutrition.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Chronic Lead Poisoning a Compensable Accident; Accident Defined.—The claimant was employed by the defendant, the Creston Auto Company, as an automobile mechanic. In that capacity he often had occasion to use a blowtorch, operated by gasoline. Through carelessness or inadvertence, tetra-ethyl gasoline, which contains lead, was used in the torch instead of white or plain gasoline, which is free from lead. As a result, the torch gave off toxic fumes. The claimant suffered from growing weakness, pains and other disabilities and on many occasions, because of sickness, had to be carried from the place of his employment. After about two years he was compelled to discontinue work, and it was recognized that he was suffering from lead poisoning. He claimed compensation under the Iowa workmen's compensa-

tion act but it was denied by the industrial commissioner. On appeal to the district court, Union County, the judgment of the industrial commissioner was set aside, the claimant was held entitled to compensation and the case was referred back to the commissioner for the purpose of determining the amount of compensation to be paid. Thereupon the employer and his insurance carrier appealed to the Supreme Court of Iowa.

Admitting that the findings of the industrial commissioner on disputed questions of fact, in the absence of fraud, were binding on the court, the court pointed out that the commissioner in making his decision had expressly avoided questions of fact and had predicated his conclusions entirely on the proposition that lead poisoning was an occupational disease and as such expressly excluded from the coverage of the workmen's compensation law. The industrial commissioner had pointed out, too, that the claimant proved no injury on any particular day but had made it manifest that disability accumulated gradually over a considerable period, without anything happening in the way of an accident or injury at any particular time. The trial court, however, in reversing the judgment of the industrial commissioner, pointed out that the claimant was engaged as an automobile mechanic. As an automobile mechanic he was naturally and ordinarily exposed to certain common hazards of his occupation, as, for instance, to poisoning by carbon monoxide. If his claim were based on such a hazard, he would be seeking compensation for an occupational disease. It was based, however, on circumstances outside the usual hazards of an automobile mechanic, since he could not have contracted lead poisoning in the ordinary course of his occupation. It was through neglect or oversight or mistake and not as a part of the regular and ordinary business of his employer that he was poisoned, and under such circumstances the poisoning was not an occupational disease. The court quoted with approval from its decision in *Gay* v. *Hocking Coal Co.*, 184 Iowa 949, 169 N. W. 360, 363:

> If the employer fails to provide a reasonably safe place to work, or fails to observe the specific requirements of the statute with respect thereto, and as a result of such neglect the employee is injured, the liability of such employer cannot be avoided by calling such injury an "occupational disease," or by showing that disease of that nature is often the accompaniment or result of such employment, even when all due care has been exercised by the employer. . . . A wrongful injury which operates to destroy or undermine or impair the health of another is no less actionable than is a wrong from which the injured person sustains wounds or bruises or broken bones.

"Without attempting to analyze into just what category the injuries the claimant herein sustained falls," said the Supreme Court, "it is sufficient to say that his injuries were as directly due to injury suffered by him in the course of his employment by the defendant as if he had fallen off a defective ladder or had in any way been given an unsafe place in which to work. That he was gradually stricken and frequently overcome was just as much an injury suffered in the course of his employment as if he had been stricken suddenly by some external and violent means. Whether it be put on the basis of failure to provide a safe place to work, or any other, the defendant inflicted upon its employee an injury for which he should be compensated."

The judgment in favor of the claimant was therefore affirmed. —*Black v. Creston Auto Co. (Iowa), 281 N. W. 189.*

Malpractice: Absence of License as Evidence of Malpractice; Qualifications of Expert Witnesses; Use of Roentgenograms.—The plaintiff employed an unlicensed chiropractor to improve her general health, to assist her in gaining weight and to make her feel better physically. The chiropractor seems to have attributed her trouble to a displaced vertebra, and when the patient complained of the severity of the treatment the chiropractor explained that the pain was due to the vertebra going back into place. Thereafter the patient sued the chiropractor for malpractice, claiming that she, the chiropractor, was negligent in not using roentgenograms as an aid to diagnosis and that she used undue and unnecessary force in treatment. The trial court directed a verdict for the defendant chiropractor. On appeal, the court of appeals, Hamilton County, Ohio, reversed the judgment entered in the chiropractor's favor and certified the case to the Supreme Court of Ohio for review.

The fact that the defendant chiropractor was unlicensed, said the Supreme Court, does not of itself warrant any inference that the treatment she administered was negligently or improperly given, but even under such circumstances the plaintiff, in order to recover for malpractice, must show that the injury complained of was due to negligence or unskilfulness. In the trial court the plaintiff sought to prove the chiropractor's malpractice by the testimony of certain nonsectarian physicians, whom she proffered as expert witnesses. These witnesses were not asked as to their knowledge and experience with respect to chiropractic practice and treatment nor did they indicate their knowledge and experience concerning it. On objection by the defendant, the trial court refused to allow them to answer the questions propounded to them. The court of appeals held this to be error, but the Supreme Court concurred in the view of the trial court. When a patient selects a doctor of a recognized school of treatment, said the Supreme Court, he thereby adopts the kind of treatment common to that school and the sufficiency of the skill and diligence with which the patient is treated must be measured by the evidence of witnesses trained and skilled in treatment of that kind. The Supreme Court pointed out, however, that if the criterion by which any witness evaluates the defendant's treatment is the criterion of the defendant's own school of practice, and if the witness is otherwise qualified to testify, the fact that he belongs to another school does not disqualify him.

The trial court erred, however, the Supreme Court held, in directing a verdict in the case, inasmuch as there was conflicting testimony before it with respect to diagnosis. Three physicians called on behalf of the plaintiff, who had examined her subsequent to the chiropractic treatment complained of and had taken roentgenograms, testified that they found "a sacroiliac dislocation or subluxation." The defendant chiropractor claimed that prior to treatment she herself had found a similar condition and that the treatment she administered was directed toward remedying it. There was evidence, however, said the Supreme Court, that the diagnosis made by the defendant after her attention had been called to the roentgenograms was not the diagnosis that she had made prior to that time. Prior to that time she diagnosed the plaintiff's trouble as a displaced vertebra. There was evidence before the trial court, too, that the defendant chiropractor's failure to use roentgenograms resulted in an erroneous diagnosis and that the use of roentgenograms is required because of the difficulty in diagnosing subluxations and dislocations such as those described, unless roentgenograms are used.

The Supreme Court affirmed the judgment of the court of appeals, reversing the judgment of the trial court in favor of the defendant chiropractor.—*Willett v. Rowekamp (Ohio), 16 N. E. (2d) 457.*

Society Proceedings

COMING MEETINGS

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 7-9. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.

American Congress of Physical Therapy, New York, Sept. 5-8. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.

Idaho State Medical Association, Boise, Aug. 23-26. Dr. J. N. Davis, 204 Fourth Avenue East, Twin Falls, Secretary.

National Medical Association, New York, Aug. 14-18. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.

Oregon State Medical Society, Gearhart, Sept. 6-7. Dr. M. L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.

Rocky Mountain Medical Conference, Salt Lake City, Sept. 5-7. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver, Secretary.

Utah State Medical Association, Salt Lake City, Sept. 5-7. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.

Washington State Association, Spokane, Aug. 28-30. Dr. V. W. Spickard, 1305 Fourth Ave., Seattle, Secretary.

Wyoming State Medical Society, Salt Lake City, Sept. 5-7. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

8: 369-420 (May) 1939

Medical and Public Health Needs and Advice to Young Doctors. S. Harris, Birmingham.—p. 369.

The Need for Clinics in a Mental Hygiene Program for Alabama. F. A. Kay, Tuscaloosa.—p. 386.

Treatment of Heart Failure. W. G. Harrison Jr., Birmingham.—p. 389.

Chronic Arthritis. S. R. Terhune, Birmingham.—p. 394.

American Heart Journal, St. Louis

17: 515-642 (May) 1939

Comparison of Changes in Human Electrocardiogram Following Administration of Strophanthin and Acetylcholine and During Vagal Stimulation. N. A. Nielsen and M. Trier, Copenhagen, Denmark.—p. 515.

Variations in Auriculoventricular and Ventriculo-Auricular Conduction Dependent on Time Relations of Auricular and Ventricular Systole: Supernormal Phase. E. M. Kline, J. W. Conn and F. F. Rosenbaum, Ann Arbor, Mich.—p. 524.

Measurement in Man by Pneumocardiographic Method of Excess of Arterial Outflow from Chest Over Venous Inflow During the Heart Cycle. H. A. Blair and A. M. Wedd, Rochester, N. Y.—p. 536.

*Circulatory Effects of Intravenous Injection of 50 Per Cent Dextrose and Sucrose Solutions in Patients with Heart Disease. L. B. Ellis and J. M. Faulkner, Boston.—p. 542.

Tetralogy of Fallot: Terminal Sepsis with Crossed Emboli. R. F. Herndon, A. Vass and J. J. Donovan, Springfield, Ill.—p. 553.

Contusion of the Heart: Report of Case with Serial Electrocardiograms. L. B. Smith and H. J. McKeown, Phoenix, Ariz.—p. 561.

Cardiac Aneurysm. L. H. Berk, New York.—p. 569.

Thermal Reflex Vasodilatation Test in Peripheral Vascular Disease. G. Saland, C. Klein and H. Zurrow, New York.—p. 581.

Interpretation of the U Wave of the Electrocardiogram. L. H. Nahum and H. E. Hoff, New Haven, Conn.—p. 585.

New Electrode for Recording Bio-Electric Potentials. H. L. Andrews, Lexington, Ky.—p. 599.

*Enlargement of Heart in Infants and Young Children. M. A. Kugel, Miami Beach, Fla.—p. 602.

Body Build and Heart Size: Study of Twenty Pairs of Identical Twins and Fifteen Pairs of Unrelated Individuals with Similar Body Height and Weight. W. J. Comeau and P. D. White, Boston.—p. 616.

Dextrose and Sucrose Solutions and Heart Disease.—Ellis and Faulkner observed the changes that took place in the circulation of thirty-one patients with heart disease as well as of five individuals with normal cardiovascular systems during and following the intravenous injection of 100 cc. of a 50 per cent solution of dextrose or sucrose. All the subjects tended to respond in the same general way. The degree or type of heart failure did not apparently influence the response obtained. Slight or no changes in the arterial blood pressure and heart rate occurred. The venous pressure tended to increase moderately during the injection but began to return toward normal immediately on its completion. The increase ranged from 0.5 to 7 cm. of water, with an average of 2.6 cm. for those who received dextrose and 3.5 for those who received sucrose. The plasma volume increased from 3 to 17 per cent (average 13 per cent) within a minute of the completion of the injection. The rise persisted for a varying period of time, but usually after thirty minutes the plasma volume began to fall again and in most cases reached or fell below the control level within an hour. The responses obtained with dextrose and with sucrose were similar. It is clear that the intravenous injection of 100 cc. of a 50 per cent solution of dextrose or sucrose within ten minutes produces a distinct strain on the cardiovascular system. Although the absolute burden is apparently no greater in cardiac patients than in normal persons, such patients have much less reserve for such emergencies. No untoward results were encountered, but it seems that in an occasional case such an extra load on the circulation of a person whose cardiac status is already in precarious balance may result in serious consequences. Such injections are rational only when it is desired to produce the effect of a markedly hypertonic solution or to introduce sugar parenterally into the body without giving much fluid, but it is not rational to give it with the idea that less strain is produced on the circulation than would result from the injection of a liter of a 5 per cent solution of dextrose given slowly.

Enlarged Hearts in Children.—Kugel points out that only in recent years has it been demonstrated that in many cases what was formerly called "idiopathic hypertrophy" of the heart was in reality associated with congenital malformations, rheumatic fever, glycogen-storage disease, myocardial degeneration and fibrosis. Cases of dilatation and hypertrophy of the heart, associated with myocardial degeneration and fibrosis, constitute the majority of those formerly included under the title of "idiopathic hypertrophy." The term "congenital idiopathic hypertrophy" of the heart is not only undesirable but also confusing. In most instances the cause or nature of the enlargement of the heart in an infant or young child can be determined if the various criteria or diseases are kept in mind. The author states that a study of the cases even as reported in the literature revealed that most of them were not genuine examples of congenital idiopathic hypertrophy of the heart, since either myocardial disease or other factors were found at postmortem examination which could have had a causal relationship to the cardiac enlargement. In 1933 Kugel and Stoloff described seven cases of unusual enlargement of the heart in infants and young children which heretofore might have been regarded as examples of idiopathic hypertrophy. In all instances the clinical picture and the pathologic changes in the myocardium were similar. The chief features of this condition are enlargement of the heart without known cause, an afebrile course, the sudden onset of symptoms, dyspnea and cyanosis and the lack of signs or history suggestive of congenital heart disease, rheumatic fever, diphtheria, infections, anemia or metabolic disturbances. Further investigation of fresh pathologic material with chemical examinations in an additional case confirmed the original impression that this form of cardiomegaly was different from von Gierke's disease and other types of cardiac enlargement.

American Journal of Diseases of Children, Chicago

57: 997-1222 (May) 1939

*Virus Pneumonia of Infants Secondary to Epidemic Infections. E. W. Goodpasture, S. H. Auerbach, H. S. Swanson and E. F. Cotter, Nashville, Tenn.—p. 997.

Close Succession of Cases of Erythema Nodosum of Nontuberculous Pathogenesis. H. Ernberg and O. Gabinus, Stockholm, Sweden.—p. 1012.

Dental Caries Among Eskimos of Kuskokwim Area of Alaska: II. Biochemical Characteristics of Stimulated Saliva Correlated with Dental Caries and Occurrence of Salivary Calculus. M. Karshan, T. Rosebury and L. M. Waugh, with technical assistance of Mary Segall, New York.—p. 1026.

Erythrocytes in Urinary Sediment in Health and in Disease (Scarlet Fever): Studies by the Orthotolidine Test. J. K. Calvin and J. Carbone, Chicago.—p. 1035.

Marble Bones: II. Chemical Analysis of Bone. B. Kramer, H. Yuska and M. M. Steiner, Brooklyn.—p. 1044.

Limitation of Bacterial Contamination of Air by a New Automatic Incubator for Infants. C. C. Chapple, Philadelphia, and A. S. Kenney, New Orleans.—p. 1058.

Placental Transmission of Hypersensitiveness to Ascaris Lumbricoides Actively Induced in the Pregnant Woman. B. Zohn, Brooklyn.—p. 1067.

Sulfanilamide and Related Compounds: Review of Literature. J. A. Bigler and J. Q. Haralambie, Chicago.—p. 1110.

Virus Pneumonia Secondary to Epidemic Infections.—Goodpasture and his co-workers describe a specific type of respiratory infection in five infants up to 2½ years of age. The lesions were such as to indicate that, notwithstanding associated bacterial infection, a specific virus determined the fairly distinctive phenomena encountered both grossly and macroscopically. Characteristic intranuclear inclusions, present almost exclusively in epithelial cells of the trachea and bronchi, of their mucous glands and of the alveoli, were an essential detail; epithelial necrosis, ulceration of the tracheal and bronchial mucosa and interstitial pneumonia followed, contributing a peculiar architecture to the lesions. The first instance of this sort that the authors encountered occurred in 1931, following measles; in this case the effects of the virus infection were mild. The next case occurred in 1936 in an infant 2 weeks old who had no history of previous infection; the remaining three

cases occurred in the early spring of 1938 during an epidemic of measles and whooping cough. In two of these the condition followed measles, and in one clinical whooping cough. The authors were not able to cultivate Haemophilus pertussis from the lungs or to demonstrate lesions of whooping cough at necropsy in this last case. The infection is severe and can lead to fatal pneumonia in infants, if not primarily, at least by laying the foundation for bacterial invasion. All the cases recorded have come from the central part of Tennessee. In one typical instance the virus infection was recognized by means of frozen sections while fresh tissue was still available for animal inoculation. Rabbits, mice and young opossums showed no evidence of infection after inoculation. A Macacus rhesus monkey, having received a suspension of infected lung intratracheally while under ether anesthesia, showed an elevation of temperature on the fourth day; this lasted about twenty-four hours without clinical symptoms and was followed by recovery.

American Journal of Hygiene, Baltimore

29: 121-164 Section A (May) 1939. Partial Index
119-170 Section B
111-162 Section C
83-132 Section D

SECTION A

Cancer and Race, with Special Reference to the Jews. G. Wolff, Baltimore.—p. 121.
Normal Urinary Fluorine Excretion and Fluorine Content of Food and Water. W. Machle, E. W. Scott and J. Treon, Cincinnati.—p. 139.
Climate and Metabolic Stress. C. A. Mills, Cincinnati.—p. 147.

SECTION B

Immunity Studies in Pertussis. G. M. Lawson, Charlottesville, Va.—p. 119.
Study in Active Immunization Against Pertussis. Pearl Kendrick and Grace Eldering, with statistical analyses of data by A. J. Borowski, Grand Rapids, Mich.—p. 133.
Protective Inoculation Against Human Tuberculosis with Heat-Killed Tubercle Bacilli. E. L. Opie, E. W. Flahiff and H. H. Smith, New York.—p. 155.
Immunization Against Infectious Myxomatosis with Heat-Inactivated Virus in Conjunction with Type III Pneumococcus. Clara M. McKee, Baltimore.—p. 165.

SECTION C

Relationship of Mononuclear Response to Resistance in Experimental Trypanosomiasis. H. A. Poindexter, Washington, D. C.—p. 111.

SECTION D

Quantitative Studies on Effect of Heat on Trichina (Trichinella Spiralis) Larvae. G. F. Otto and Evelyn Abrams, Baltimore.—p. 115.
Studies on Transmission of Dirofilaria Immitis in Massachusetts. J. H. Phillips, Boston.—p. 121.

American Journal of Medical Sciences, Philadelphia

197: 593-740 (May) 1939

*Studies in Dystrophia Myotonica: I. Hereditary Aspects. A. Ravin and J. J. Waring, Denver.—p. 593.
Chemotherapy of Experimental Type II Pneumococcus Meningitis. P. Gross and F. B. Cooper, with technical assistance of Marion Lewis, Pittsburgh.—p. 609.
Lymphocytic Choriomeningitis: Report of Fatal Case with Autopsy Findings. T. E. Machella, L. M. Weinberger and S. W. Lippincott, Philadelphia.—p. 617.
*Toxicology of Fluorides. A. O. Gettler, New York, and L. Ellerbrook, Kingston, N. Y.—p. 625.
Pharmacologic Study of Trichlorethanol. G. Lehmann and P. K. Knoefel, Louisville, Ky.—p. 638.
Significance of Standard Laboratory Procedures in Diagnosis of Brucellosis. E. E. Menefee Jr. and Mary A. Poston, Durham, N. C.—p. 646.
Short Wave and Ultra Short Wave Diathermy. H. Brugsch and J. H. Pratt, Boston.—p. 653.
Significance of Small and Absent Initial Positive Deflections in Chest Lead. J. B. Vander Veer, Philadelphia, and J. C. Edwards, St. Louis.—p. 663.
*Allergy as Factor in Development of Reactions to Antirabic Treatment. H. M. Horack, Boston.—p. 672.
Studies on Calcium Creosotate: IV. Observations on Its Use in Pulmonary Tuberculosis. E. J. Fellows, Philadelphia.—p. 683.
Effect on Developing Red Blood Cells in the Fetus, of Administering Human and Hog Gastric Juice to the Adult Rat During Pregnancy. J. Stasney, G. M. Higgins and F. C. Mann, Rochester, Minn.—p. 690.
Aplastic Anemia Following Gold Injections in Which Recovery Occurred; Report of Case. M. M. Wintrobe, A. Stowell, Baltimore, and R. M. Roll, New York.—p. 698.
Phagocytic Activity in Leukemia. Nell Hirschberg, Chicago.—p. 706.

Hereditary Aspects of Dystrophia Myotonica.—Ravin and Waring found twelve cases of dystrophia myotonica among thirty-three examined members of four families. At least four additional cases of the disease could not be investigated. A table is presented in which most instances to be found in the literature of direct transmission of the disease from parent to child are tabulated. Evidence leads to the conclusion that dystrophia myotonica is transmitted as a single factor dominant but that this dominance is modified by the occurrence of "progressive inheritance." In "progressive inheritance" the onset of the disease is at an earlier age in each succeeding generation (anticipation) and the disease increases in severity in succeeding generations (potentiation). Because of the presence of progressive inheritance the parents of many patients may show little or no signs of the disease, but the disease tends to develop early in the children of patients and so prevents further propagation and the disease dies out in the family. Possible changes in the germinal material which could produce this type of heredity are described. Most studies of sex incidence have shown a preponderance of males but not to a degree suggesting sex linkage. Several of the more complete studies have shown an equal incidence of the sexes. A preponderance of males in smaller series not completed by family investigations probably results from the fact that men are more likely to present themselves for examination because the disease affects their working ability. If a man is affected his economic status becomes such that he is likely to be seen in a clinic, whereas when a woman is affected the economic status of the family is not changed and she is more likely to be seen by a private physician.

Toxicology of Fluorides.—After trying many of the recommended tests for the determination of the fluorine content of blood and tissues and finding them all time consuming or requiring too much material, Gettler and Ellerbrook devised a test that does not have these disadvantages. They state that with their test the presence of abnormal amounts of fluorine can be detected in as little as 10 Gm. or less of tissue, a drop of stomach contents or urine and 5 cc. of blood. Since fluorine is so widely distributed in nature it is present in normal human tissues. In order to establish definitely the true normal fluorine content the authors determined its content in normal human soft tissues, bones, teeth, blood and urine and found that the amounts were small (from 20 to 80 micrograms in 100 Gm. of tissue). There seemed to be no appreciable accumulation of fluorine in any one of the vital organs. The fluorine content of teeth and bones is of the order of from 0.01 to 0.03 per cent. The fluorine content of the urine is the same as that of the tissues. The results of control analyses, to which definitely known quantities of fluorine were added, confirm the accuracy of the method. The fluorine content of several organs in five fatal acute cases of sodium fluoride poisoning was found to be from 0.14 to 1.6 mg. in 100 Gm. of internal organs. The fluorine content of the brain was somewhat smaller than that of any other organ. The fluorine content of the muscles was somewhat lower than the organs but a little higher than the brain. The fluorine content of the urine varied a great deal: in one case it was approximately ten times that of the tissues. The smallest calculated lethal dose of fluorine absorbed into the internal organs in the cases was 104.66 mg. (calculated to a body weighing about 140 pounds). For bodies of different weight the fluorine content of the organs can be calculated by multiplying the combined fluorine content of the liver and the brain by 15. The symptoms of acute fluorine poisoning are immediate severe abdominal pain, with vomiting and purging. Death results from cardiac paralysis and occurs in from one to six hours. Chronic poisoning from small daily doses of sodium fluoride may occur. From 18 to 32 mg. of fluorine per kilogram of weight given daily to dogs for two weeks produced no symptoms except loss of appetite. After somewhat larger amounts, from 50 to 100 mg. per kilogram for several months, the animal walked with difficulty, his back sagged, the hair fell out and the teeth chipped off.

Allergy and the Antirabic Treatment.—To the various types of reactions to the Pasteur treatment Horack adds the report of a patient in whom encephalitis developed without paralysis during the Pasteur treatment. It was believed to be due to an allergic response to the inoculations. As the result of an investigation of sixteen persons who had suffered reactions to the Pasteur treatment an exceedingly high incidence

(87.5 per cent) of allergic disease was observed as compared with a control group (33⅓ per cent) in whom no neuroparalytic accidents occurred. In the control group the allergic individuals suffered much more severe local reactions than the nonallergic individuals. The study suggests that a careful investigation of a patient's allergic background and a determination of his sensitivity to the antirabic vaccine are valuable measures in determining those individuals who may suffer reactions to the treatment. A method of desensitization was successfully employed for three patients who had or developed a marked sensitivity to the antirabic vaccine. A hypothetical analogy is drawn between endophthalmitis phaco-anaphylactica and the unfavorable reactions to the Pasteur treatment. It is suggested that as the result of desensitization, evidenced by the loss of cutaneous sensitivity, a loss of central nervous system sensitivity may also occur. Such a loss of sensitivity would prevent or arrest the development of neuroparalytic accidents associated with the Pasteur treatment.

Annals of Medical History, New York

1: 203-314 (May) 1939

The Early History of the Teaching of: I. Human Anatomy in London; II. Morbid Anatomy and Pathology in Great Britain. H. Rolleston, Haslemere, England.—p. 203.
Quacks and Quackery in Seventeenth Century England. H. Silvette, University, Va.—p. 239.
Daniel Hale Williams, M.D., LL.D., F.A.C.S.: His Life and Times, with Some Account of the First Pericardiorrhaphy for Wound. H. Farmer, Wayne, Pa.—p. 252.
Percy Bysshe Shelley: Tuberculosis and Genius. L. J. Moorman, Oklahoma City.—p. 260.
John of Gaddesden on Epilepsy. W. G. Lennox, Boston.—p. 283.

Archives of Internal Medicine, Chicago

63: 813-1016 (May) 1939

Injections of Highly Concentrated Liver Extract in Treatment of Idiopathic Ulcerative Colitis. G. Cheney, San Francisco.—p. 813.
Ventricular Asynchronism in Bundle Branch Block. E. Braun-Menendez and L. A. Solari, Buenos Aires, Argentina.—p. 830.
*Neutrophilic Leukocytosis in Spinal Fluid Associated with Cerebral Vascular Accidents. S. R. Townsend, Montreal; R. L. Craig, Durham, N. C., and A. L. Braunstein, Baltimore.—p. 848.
Studies of Urobilinogen: I. Simple and Rapid Method for Quantitative Determination of Urobilinogen in Stool and in Urine. R. Sparkman, Cincinnati.—p. 858.
Id.: II. Normal Values for Excretion of Urobilinogen in Single Specimens of Urine and Stool. R. Sparkman, Cincinnati.—p. 867.
Id.: III. Clinical Value of Determinations of Urobilinogen Content of Single Specimens of Urine and Stool. R. Sparkman, Cincinnati.—p. 872.
Pancreatic Carcinoma: Review of Thirty-Four Autopsies. F. W. Grauer, Montreal.—p. 884.
Breath-Holding Test: Simple Standard Stimulus of Blood Pressure. D. Ayman and A. D. Goldshine, Boston.—p. 899.
Renal Changes Following Administration of Hypertonic Solutions (50 per Cent Sucrose, 50 per Cent D-Sorbitol, 50 per Cent Dextrose and 10 per Cent Sodium Chloride). H. A. Lindberg, M. H. Wald and M. H. Barker, Chicago.—p. 907.
Influence of Liver on Serum Phosphatase. A. Schiffmann and L. Winkelman, Brooklyn.—p. 919.
*Vitamin C and the Aging Eye: Experimental Clinical Study. S. M. Bouton Jr., Detroit.—p. 930.
Effect of Breathing Gases Under Positive Pressure on Lumens of Small and Medium Sized Bronchi. A. L. Barach and P. Swenson, New York.—p. 946.
Manifestations of Trichiniasis in Central Nervous System: Report of Case with Larvae in Spinal Fluid. L. B. Evers, Ann Arbor, Mich.—p. 949.
*Sulfanilamide: Study of Its Mode of Action on Hemolytic Streptococci. C. S. Keefer and L. A. Rantz, Boston.—p. 957.
Comparative Effects on Early Syphilis of Combined and of Alternating Treatment. W. Beckh and C. W. Barnett, San Francisco.—p. 974.
Diseases of the Heart: Review of Significant Contributions Made During 1938. A. Graybiel, with editorial assistance of P. D. White, Boston.—p. 980.

Neutrophilic Leukocytosis and Cerebral Vascular Accidents.—Townsend and his associates report six cases in which softening or hemorrhage within the brain was associated with the presence of polymorphonuclear neutrophilic leukocytes in the spinal fluid in such numbers as to suggest the diagnosis of meningitis or at least meningeal irritation. They believe that this leukocytosis represents an aseptic reaction of the meninges to the damage within the brain. In none of the cases was there definite clinical or postmortem evidence of an infectious process. Some idea of the frequency of this phenomenon may be deduced from the fact that during the period covered by the authors' observations, approximately nine months, forty-three patients were admitted to the Baltimore City Hospitals who had had cerebral accidents not more than a week before and in whom signs of meningeal irritation or changes in the spinal fluid were lacking. Their six cases, they state, thus represent an incidence of approximately 12 per cent of the group. It seems to them that in cases of vascular lesions of the brain, whether hemorrhage or thrombosis, the clinical manifestations may be variable, ranging from an acute meningeal syndrome to localizing signs and a history compatible with cerebral vascular accident, with leukocytosis revealed only by lumbar puncture. In view of the experimental work of Cone and Barrera, it seems fair to explain these meningeal reactions on the basis of leukocytic response around the foci of softening or hemorrhage. In three cases in which the authors performed postmortem examination, the necrotic regions showed a varying degree of infiltration with polymorphonuclear leukocytes, mononuclear cells and a small number of wandering phagocytes containing blood pigment. Their first patient, who died early in the course of her illness, showed the greatest degree of infiltration with polymorphonuclear leukocytes. The meningeal reaction in this case was probably augmented by the administration of antimeningococcus serum.

Vitamin C and the Aging Eye.—In the course of routine refraction tests on a number of patients at the Hastings State Hospital during the late summer months of 1937, Bouton observed clouding of the optic media associated with impaired vision. Apparently this was a precursor of senile cataract, a concomitant feature of early cataract or a morbid condition. Various groups of the employee and patient population of the hospital were tested for the twenty-four hour urinary excretion of ascorbic acid, the level of the substance in the blood plasma and the twenty-four hour excretion after 600 mg. of pure ascorbic acid in tablet form was taken orally. The tests were all carried out during the late winter months of 1938. The observations differed among the groups but indicated definite vitamin C deficiency for the patients in general. For a control group of persons not connected with the institution the results corresponded in the main with those given in the literature for normally nourished persons. The described tests were also performed on a special group of patients who presented visual disturbances due apparently to changes in the tissues associated with aging of the eye. These patients were subjected, in addition, to ophthalmoscopic examination and to reading tests. The data indicated an even more marked vitamin C deficiency in this group than among the other institutional patients. Half of these patients were given massive daily doses of ascorbic acid by mouth for eight weeks, while the others received the same medication for four weeks. Determinations of the levels of reduced ascorbic acid in the blood plasma were carried out at regular intervals during treatment and one week after it, in addition to ophthalmoscopic and reading tests. The study indicated improvement of eyesight in 60 per cent of the treated patients, that is in all patients not suffering primarily from senile cataract. Marked improvement sets in within the first two weeks of treatment, if it occurs at all, with slow progression or no further change from then on. Cataracts were apparently not affected by this method of treatment, all improvements being due to clearing of the optic media and apparently to the beneficial effect on the retinal vessels and the head of the optic nerve. Whether the latter observations represented a direct or an indirect action of ascorbic acid is still a matter of conjecture, although reports of recent work indicate that a direct effect is probable.

Action of Sulfanilamide.—From a study of the mode of action of sulfanilamide in vitro and in vivo on the hemolytic streptococcus, Keefer and Rantz present the following conclusions: 1. When sulfanilamide was added to whole defibrinated blood so that the concentration was 7 mg. or more per hundred cubic centimeters there was definite bacteriostasis and in some instances a definite bactericidal effect. 2. A bactericidal effect of sulfanilamide was not seen when it was added to plasma, although bacteriostasis occurred. This bacteriostasis was less striking in plasma than in whole blood. 3. A bactericidal effect with sulfanilamide occurred in blood containing some natural antibodies. Therefore, sulfanilamide may enhance the bactericidal effect of whole blood provided natural antibodies

are present. 4. In the cases in which a bactericidal effect was not demonstrated, a bacteriostatic effect was shown. When the number of organisms was small there was almost complete bacteriostasis; when the inoculum was larger the rate of multiplication was slower and the number of organisms at the end of twenty-four hours was less than in the controls. 5. It appears that antibodies are important in destroying hemolytic streptococci in vitro even in the presence of sulfanilamide. 6. The principal action of sulfanilamide in vitro is to slow the growth of the organism. It has no direct bactericidal effect on any serologic type of hemolytic streptococci.

Archives of Otolaryngology, Chicago

29: 751-880 (May) 1939

Treatment of Deafness and Contiguous Nervous Disorders with Prostigmine: Preliminary Clinical Report. T. C. Davis and J. C. Rommel, Philadelphia.—p. 751.

Physiology of Vestibular Labyrinth. O. R. Hyndman, Iowa City.—p. 759.

*Blood Sedimentation in Acute Otitis Media and Its Complications. J. R. Hume and H. Kahn, New Orleans.—p. 820.

*Nasal Accessory Sinuses as Foci of Infection in Arthritis. H. L. Williams and C. H. Slocumb, Rochester, Minn.—p. 829.

Abscess of Brain Following Tonsillitis and Retropharyngeal Abscess: Report of Case and Review of Literature. I. S. Witchell, New York.—p. 835.

Pneumothorax and Mediastinal Emphysema Complicating Tracheotomy. M. W. Michels, Detroit.—p. 842.

Blood Sedimentation in Otitis Media.—Hume and Kahn aimed to show the trend of the rate of sedimentation in otitis media and its complications by repeated estimations and to bring out any relation that may exist between the leukocyte count and the sedimentation rate. Eleven cases were studied and there was at least one representative of each of the several types of the disease found in the middle ear and mastoid. In the case of simple uncomplicated acute otitis media the rate of sedimentation remained well within normal limits, despite a comprehensive shift in the blood picture to that of a septic process. When the serous effusion of acute otitis media becomes purulent there is a prompt rise in the sedimentation rate. The blood picture in these cases points only to an acute process. The sedimentation rate, as compared to the relatively rapid change of the blood picture, is slow to return to normal. Apparently the sedimentation rate follows the clinical regression of the pathologic changes in the middle ear. In chronic otitis media with acute exacerbations neither the blood picture nor the sedimentation rate was changed appreciably. This might be explained by fibrosis of the tympanum and mucosa of the middle ear and mastoid process. With fibrosis there is a decrease in vascularity, and with the latter there is less absorption of toxins. This lack of significant change in uncomplicated acute otitis media might be due to the fact that despite the marked congestion of the involved parts there is no actual destruction of tissue. In a case of acute exacerbation of chronic mastoiditis there was a rise in the sedimentation rate, associated with a blood picture indicative of infection. Here there was reason to believe a low grade destructive process was going on. On conservative treatment resolution occurred and the sedimentation rate fell to normal, as did the blood picture. The latter change occurred much more rapidly. In three cases of massive destruction of tissue and necrosis of bone the rate of sedimentation increased markedly after operation and was followed by a more gradual return to normal. This secondary rise may be assumed to be the result of the increased damage to the tissues incident to any surgical procedure. The blood picture in these cases is that of any septic process. In two cases representative of chronic mastoiditis in acute exacerbation only moderate changes in the rate of sedimentation were seen. The authors draw no definite conclusions as regards any correlation between the blood picture and the sedimentation but believe that the blood picture does seem to be more responsive to the acute inflammatory process, while the sedimentation rate appears to give a truer picture of the degree of destruction of tissue.

Sinuses as Foci of Infection in Arthritis.—In 100 cases of infectious arthritis Williams and Slocumb point out that x-ray examination indicated changes in the paranasal sinuses in only forty-two in which the condition might have been caused by infection. Of the forty-two patients, seventeen related a history suggesting suppurative disease in the paranasal sinuses and four of hay fever or vasomotor rhinitis. Therefore, twenty-one of the forty-two cases presented x-ray evidence and a history of symptoms of rhinitis. Clinical investigation yielded definite evidence of suppurative disease of the paranasal sinuses in twenty, nineteen of which were in the group of forty-two in which positive x-ray evidence was obtained; in one case, in which suppurative involvement of the sphenoid and the posterior ethmoid sinuses was found, the results of x-ray examination of the paranasal sinuses were negative. In seventeen cases in which x-ray evidence of sinusitis was obtained, clinical investigation did not yield evidence of sinusitis and in six cases the examination was reported incomplete. In three cases in the group of twenty in which clinical investigation had yielded evidence of sinusitis, removal of infected teeth or local treatment of the nose apparently eradicated suppurative disease in the paranasal sinuses, but a favorable effect on the course of the arthritis was not observed. In this same group there were two patients with cardiac complications contraindicating operative intervention and three refused surgical intervention. Of the twelve patients with infectious arthritis who were subjected to operation on the paranasal sinuses in an attempt to eradicate a focus of infection, six experienced permanent improvement that might be attributed to the operation, but in four of these six tonsillectomy was also performed at nearly the same time. One other patient experienced transient improvement in arthritic symptoms after operation on the sinuses. The results experienced by these six patients do not support the conclusion that sinusitis is the principal focus of infection in cases of infectious arthritis. Too optimistic an outlook as to the results of this type of therapy should be avoided, although the sinuses should not be ignored as possible foci of infection.

Archives of Physical Therapy, Chicago

20: 193-256 (April) 1939

Indications and Technic of Iontophoresis. F. Baker, San Francisco.—p. 197.

Measurement of Dosage in Short Wave Therapy. J. Kowarschik, Vienna, Austria.—p. 208.

Undergraduate Education in Physical Therapy. C. W. Dail, Loma Linda, Calif., and F. B. Moor, Los Angeles.—p. 215.

Value of Exercise in Control of Posture. Helen Dobson Denniston, Madison, Wis.—p. 220.

Manipulation in Low Back Cases. I. F. Hummon Jr., Oak Park, Ill.—p. 224.

Physiologic Considerations of Artificial Fever Therapy. M. G. Schmitt, Chicago.—p. 227.

Postoperative Use of Radium for Nasal Polyps. W. A. Ford, Sheboygan, Wis.—p. 232.

After-Care of Infantile Paralysis: Braces and Operations. F. Carr, New York.—p. 236.

California and Western Medicine, San Francisco

50: 321-392 (May) 1939

Medical Trends: Address of the President. W. W. Roblee, Riverside.—p. 329.

X-Ray Treatment of Carcinoma of Breast. L. C. Kinney, San Diego.—p. 333.

*Dermatomyositis: Report of Case Associated with Rheumatic Heart Disease. F. Kellogg, Long Beach, and F. Cunha, San Francisco.—p. 337.

Insulin Shock Therapy in Dementia Praecox: Report of Series of Cases. C. W. Mack and B. O. Burch, Livermore.—p. 339.

Congenital Renal Anomalies, with Special Reference to Horseshoe Kidney. C. F. Rusche and S. K. Bacon, Hollywood.—p. 344.

Sobisminol: Its Oral Administration: Clinical Responses and Advantages in Five Luetic Patients in Private Practice. W. E. Kay and J. W. Fricke, San Francisco.—p. 348.

Urinary Tract Infections: From a General Practice Standpoint. H. C. Bumpus, Jr., Pasadena.—p. 351.

Dermatomyositis.—Kellogg and Cunha report a case of dermatomyositis which followed vaccination for smallpox and which was associated with rheumatic heart disease. Unusual features of this case were the absence of pain, the presence of mitral stenosis and the isolation of organisms in the biopsy specimen. The onset was gradual and an organism of low virulence was undoubtedly introduced at the time of the vaccination, slowly spreading throughout the body over the next few years.

Georgia Medical Association Journal, Atlanta

28: 181-220 (May) 1939

Modern Trends of Medical Practice. G. N. Coker, Canton.—p. 181.
Diagnosis and Management of Acute Cholecystitis. H. M. Clute, Boston. —p. 186.
Excision of Panniculus Adiposus. L. Smith, Atlanta.—p. 193.
Diarrhea in Adults. F. E. Marsh, Chattanooga, Tenn.—p. 201.

Journal of Bacteriology, Baltimore

37: 473-582 (May) 1939

"Activation" of the Lactase of Escherichia Coli-Mutabile. C. J. Deere, Memphis, Tenn.—p. 473.
Introduction of Agar-Agar into Bacteriology. A. P. Hitchens, Washington, D. C., and M. C. Leikind, Baltimore.—p. 485.
Nicotinic Acid and Thiamin Hydrochloride as Growth-Promoting Factors for Brucella. Grace P. Kerby, San Antonio, Texas.—p. 495.
Oxidation of Ascorbic Acid as Influenced by Intestinal Bacteria. W. B. Esselen Jr. and J. E. Fuller, Amherst, Mass.—p. 501.
Relation Between Assimilation and Respiration in Suspensions and in Cultures of Escherichia Coli. C. E. Clifton and W. A. Logan, Palo Alto, Calif.—p. 523.
Extracellular Proteolytic System of Clostridium Parabotulinum. S. S. Elberg and K. F. Meyer, San Francisco.—p. 541.
Metabolic Studies of a Nonhemolytic Streptococcus. J. W. King, J. C. Garey and M. A. Farrell, State College, Pa.—p. 567.

Journal of Lab. and Clinical Medicine, St. Louis

24: 779-892 (May) 1939

Sulfanilamide and Derivatives in Treatment of Experimental Pneumococcic Infections. J. A. Kolmer, G. W. Raiziss and Anna M. Rule, Philadelphia.—p. 779.
Determination of Sulfapyridine in Blood. E. G. Schmidt, Baltimore.—p. 795.
Influence of Water-Soluble Gonadotropic Factor of Pregnancy Urine on Testes of the Normal Immature and Mature Rat. H. S. Rubinstein and A. Abarbanel, Baltimore.—p. 799.
Excretion of Vitamin C in the Sweat. I. S. Wright and Elizabeth MacLenathen, New York.—p. 804.
Intradermal Test for Vitamin C Determination. I. S. Wright and Elizabeth MacLenathen, New York.—p. 806.
Potassium Cyanide as Agent Inhibiting Oxidation of Vitamin C in Vitro. I. S. Wright and Elizabeth MacLenathen, New York.—p. 808.
Biochemical Observations in Hypoglycemia Induced by Insulin: II. Behavior of Blood Gases in Relation to the Hypoglycemic State. E. F. Rosenberg, Rochester, Minn.—p. 809.
Id.: III. Glycorrhachia and Hypoglycemia. E. F. Rosenberg, Rochester, Minn.—p. 815.
*Platelet Studies in Normal Men and Women (Menstruating and Nonmenstruating) and Subjects with Bleeding Disorders: Counts, Disintegration Rates and Intradermal Platelet Injections. Pearl Lee and Betty Nims Erickson, Detroit.—p. 821.
Action of Sodium Thiocyanate on Tissue Oxygen Consumption. D. G. Friend, Boston, and R. W. Robinson, Worcester, Mass.—p. 832.
*Liver Dysfunction as Possible Causative Factor in Renal Lithiasis: Clinical Investigation on Thirty-Nine Patients. W. J. Ezickson, Philadelphia.—p. 836.
Electrocardiographic Changes Following Intravenous Administration of Magnesium Sulfate: II. Experimental Study on Dogs. T. R. Van Dellen and J. R. Miller, Chicago.—p. 840.

Platelet Studies in Health and in Hemophilia.—Lee and Erickson studied the total and differential platelet counts and disintegration rates, with changes in the differential at the end of the disintegration period, of normal men, nonmenstruating women, normal women during menstruation and persons with hemophilia. The majority of the total counts in all groups were between 400 and 600 thousand. Acute colds seemed to cause a definite drop in the count. During menstruation the totals were moderately lowered. When the count was high in normal individuals the percentage of large platelets in the differential was higher, while in the hemophilic patients the proportion of large platelets was definitely decreased. The disintegration rate determinations indicated a 30 per cent destruction as the lower limit of normal. Patients with hemophilia and menstruating women gave a retarded rate. The clotting time was delayed up to twenty minutes during menstruation, the normal with the method used being from ten to twelve minutes. These points establish a similarity between the blood of hemophilia and that of menstruation. Intradermal platelet injections produced a mild reaction in normal persons, whereas a negative reaction was obtained in hemophilia; in patients with chronic idiopathic thrombopenic purpuras the reaction was increased. From one case of aplastic anemia with few platelets a negative reaction was obtained. In the secondary thrombopenias both increased and negative reactions occurred. All reactions became normal, however, when the platelet count became normal. These data indicate that platelet differential counts and disintegration rates, together with tests of skin sensitivity to platelets, may become an important aid in diagnosis and prognosis.

Hepatic Dysfunction in Renal Lithiasis.—Ezickson determined the hepatic function, by the bromsulphalein test, of thirty-nine persons who have or have had renal or ureteral calculi. In fifteen individuals given 5 mg. of the dye per kilogram of weight 50 per cent of the thirty minute nonfasting specimens showed retention of the dye, ranging from 14 to 60 per cent. There was a 90 per cent retention of the dye, ranging from 13 to 40 per cent, in the thirty minute fasting specimens of persons given 5 mg. of the dye per kilogram of weight. Thirty-four patients were analyzed for vitamin A deficiency and thirty-two (94 per cent) showed a deficiency. The data from this investigation lead the authors to believe that there is a close relationship between hepatic dysfunction, vitamin A deficiency and renal lithiasis. This should open up a new avenue in the study of the pathogenesis of renal calculi.

Journal-Lancet, Minneapolis

59: 185-248 (May) 1939

Chemical Blood Analyses of Clinical Significance. Mildred R. Ziegler, Minneapolis.—p. 185.
Foreign Body (Bobbie Pin) in Duodenum. F. P. Silvernale, Great Falls, Mont.—p. 190.
Chronic Idiopathic Xanthomatosis of Hand-Schüller-Christian Type, with Special Reference to Oral Manifestations: Report of Three Cases. J. T. Cohen and Charlotte Fisk, Minneapolis.—p. 192.
Study of Infant Mortality in Montana. A. L. Gleason, Great Falls, Mont.—p. 197.
Rheumatic Fever in Children: Evidences of Activity of Infection and Notes on Various Therapeutic Procedures. A. E. Hansen, Minneapolis. —p. 201.
Cerebral Palsy. L. F. Zini, Minneapolis.—p. 206.
Embryonal Adenosarcoma of Kidney. W. M. Balfour, Minneapolis.—p. 211.
Enteric Intussusception. P. Anderson and W. R. Jones, Minneapolis. —p. 214.
Leukemia in Childhood: Evaluation of Present Status of the Problem, with Particular Reference to Study of Cases Treated at the University of Minnesota Hospitals from 1930 to 1938. Marguerite Booth and R. R. Rembolt, Minneapolis.—p. 216.
Effect of Obstetric Analgesics on the Infant: Clinical Observations of 188 Cases. H. C. Joesting, Butte, Mont.—p. 229.
Pneumonia in Childhood. W. E. Donahoe, Sioux Falls, S. D.—p. 231.
Hypertrophic Pyloric Stenosis: Review of 100 Cases. O. S. Wyatt, Minneapolis.—p. 233.
*Reducing Premature Infant Mortality, with Special Emphasis on Resuscitation. A. V. Stoesser, Minneapolis.—p. 236.

Premature Infant Mortality.—Stoesser discusses the means by which the premature infant mortality was reduced at the Minneapolis General Hospital. The study takes in a period of eight years. The first two days of the infant's life are referred to as the "period of resuscitation." The second period is roughly divided into two phases. The interval from the forty-eighth hour to the tenth day is termed the period of "adaptation to feeding" and from the eleventh day up to the time of discharge the "period of growth and development." During the first and second years of observation a large number of the infants died from bronchopneumonia, otitis media and erysipelas in the period of growth and development. Respiratory infections were prevalent among the personnel of the hospital especially during the winter months of the second year. Rigid isolation technic was introduced and the results were most encouraging. The 27 per cent death rate occurring after the tenth day of life in the second year of observation dropped to 3.5 per cent the following year. There was again an increase of respiratory infections in the fourth year but the death rate rose only to 6.9 per cent. With gradual improvement along simple lines in the physical set-up of the premature nursery there was a consistent fall the following years in the number of infants who died during the period of growth and development. Examination of the records of the infants dying during the period of adaptation showed that many of these babies had a large amount of regurgitation, which was followed in a few days by marked diarrhea. At necropsy, bronchopneumonia was found in a few cases while others gave some evidence of infection in the middle ear. Efforts were made to stop the regurgitation and the diarrhea by concentrating the formulas and by changing to feedings containing a high protein and a low carbohydrate content. The response was poor. A new feeding schedule was adopted. Starting with small amounts for the

smaller premature babies, the food intake was gradually and carefully increased for at least ten days. After this, larger increases in volume were permitted. The majority of the babies adapted themselves to the formula and progress was ultimately good. The mortality rate during the period of adaptation to feeding dropped to a low figure and remained there, but there was no improvement during the first forty-eight hours. Too much attention had been given to the later phases of premature care, and not enough emphasis had been placed on the methods of resuscitation. Many of the premature infants who failed to respond during the first hour of the period of resuscitation had subnormal temperatures. This prompted the construction of a unit or incubator containing a regular bassinet, by means of which the temperature of the infant was kept at the proper level from the moment of birth. The infant was then closely watched and the necessary measures for resuscitation were performed within the unit rather than on the delivery table, where chilling could easily take place. Mucus was removed from the air passages. The head of the bassinet was always lowered from 4 to 6 inches so that the secretions and the mucus in the respiratory passages could escape. For the first hour of life the premature infant was disturbed as little as possible. Then if he appeared to be doing fairly well, he was moved in the incubator to the nursery and weighed. Following this, a rest period of sixteen hours was permitted. No water or food was administered. At the end of this period, excessive amounts of the vernix caseosa were removed with oil and, if the baby's color was good, water and later milk were given in small amounts. Throughout the first forty-eight hours of life the infant was closely observed for cyanotic attacks. The results of these simple measures were fairly good. The mortality rate dropped from 19.1 and 20 per cent in the fifth and sixth years of observation to 12.2 and 14.5 per cent in the seventh and eighth years. The author discusses some of the salient features of present day resuscitation in order to stimulate a more determined and concentrated effort to improve the system of accomplishing normal breathing in the newborn. Although there is still plenty of room for investigative studies, present methods when properly performed can save many infants, especially premature babies. There always will be a certain number of deaths from intracranial hemorrhages, anomalies incompatible with life or marked developmental deficiencies.

Journal of Nervous and Mental Disease, New York

89: 757-892 (June) 1939

"Kate the Curst." J. W. Draper, Morgantown, W. Va.—p. 757.
Comparison of Psychologic "Repression" and Neurologic "Inhibition." R. R. Grinker, Chicago.—p. 765.
Cystic Hydrops of Pineal Gland. A. F. Liber, New York.—p. 782.
Genealogical Studies in Huntington's Chorea. T. T. Stone and E. I. Falstein, Chicago.—p. 795.
Treatment of Schizophrenia with Cardiazol in Convulsant Doses. H. Delgado, Lima, Peru.—p. 810.

Journal of Nutrition, Philadelphia

17: 407-512 (May) 1939. Partial Index

Utilization of Calcium of Milk by Preschool Children. Gladys Kinsman, Dorothy Sheldon, Elizabeth Jensen, Marie Bernds, Julia Outhouse and H. H. Mitchell, Urbana, Ill.—p. 429.
Influence of Different Levels of Milk Intake on Acid-Base Mineral Balances of Children. Helen A. Hunscher, Frances C. Hummel and Icie G. Macy, Detroit.—p. 461.
Relation of Dietary Fat to Thiamin Requirements of Growing Rats. F. E. Stirn, A. Arnold and C. A. Elvehjem, Madison, Wis.—p. 485.
Heat Production and Blood and Urine Constituents After Administration of d-Lysine Monohydrochloride to the Dog. J. R. Doty and A. G. Eaton, New Orleans.—p. 497.
Heat Production and Blood and Urine Constituents After Administration of d-Arginine Monohydrochloride to the Dog. A. G. Eaton and J. R. Doty, New Orleans.—p. 505.

Kansas Medical Society Journal, Topeka

40: 185-228 (May) 1939

Sulfapyridine Treatment of Pneumonia. L. H. Leger and E. H. Hashinger, Kansas City.—p. 185.
Venous Pressure Apparatus with Its Clinical Applications. F. R. Johnson, Topeka.—p. 189.
Pentothal Sodium in Eye Surgery. P. H. Lorhan, Corinne Westphal and Eleanor Grandstaff, Kansas City.—p. 193.
Effect of Morphine on Intestinal Motility. A. E. Hertzler, Halstead.—p. 197.

Medicine, Baltimore

18: 129-220 (May) 1939

Extrapleural Pneumonolysis in Treatment of Pulmonary Tuberculosis. A. H. Aufses, New York.—p. 129.
Decrease in Functional Capacity of Lungs and Heart Resulting from Deformities of Chest: Pulmonocardiac Failure. E. M. Chapman, D. B. Dill and A. Graybiel, Boston.—p. 167.
Sulfur Therapy in Arthritis: Review of Literature. B. I. Comroe, Philadelphia.—p. 203.

New England Journal of Medicine, Boston

220: 729-770 (May 4) 1939

*Analysis of Treatment and Mortality of 390 Cases of Acute Agranulocytic Angina. H. Jackson Jr. and T. J. G. Tighe, Boston.—p. 729.
Constructive Program of Medical Care for the Low Income Group. C. Frothingham, Boston.—p. 733.
Assay of Crystalline and Urinary Androgens, with Special Reference to Their Measurement by Colorimetric Method. H. B. Friedgood and Helen L. Whidden, Boston.—p. 736.
Endocrinology as Now Practiced. R. T. Frank, New York.—p. 741.
Unilateral Renal Disease with Arterial Hypertension: Report of Case Apparently Cured Following Nephrectomy. J. D. Barney and H. I. Suby, Boston.—p. 744.
Diagnostic Roentgenology. R. Schatzki, Boston.—p. 747.

220: 771-818 (May 11) 1939

The Joseph H. Pratt Diagnostic Hospital. S. Proger, Boston.—p. 771.
Factors Involved in Stability of Therapeutic Effect in Metrazol Treatment of Schizophrenia: Report of 146 Cases. L. H. Cohen, Worcester, Mass.—p. 780.
Legislative Procedure. C. A. Herter, Boston.—p. 784.
Tuberculosis of Symphysis Pubis. L. Alpert, Middleboro, Mass.—p. 786.
Conservative Ovarian Surgery in the Handling of Dermoid Cysts. A. A. Levi, Boston.—p. 793.
Dermatology. P. C. Baird Jr., Boston.—p. 794.

Agranulocytic Angina.—Jackson and Tighe discuss the efficacy of various forms of treatment in 390 cases of acute agranulocytic angina reported in the literature since 1933. Only papers giving complete data relative to diagnosis and treatment are considered. The mortality in seventy-five untreated cases was 78 per cent. The mortality of forty-three persons given no specific therapy but receiving more than three days of general hospital care was 70 per cent. The mortality of the 130 persons receiving inadequate amounts of any supposedly specific therapy was 77 per cent. Neither transfusions nor roentgen therapy seemed to alter the mortality rate. Treatment by yellow bone marrow extract, leukocytic cream or adenine sulfate has not been widely enough reported on to permit any accurate conclusions as to their worth. Because of the low mortality in the cases so far reported, these measures deserve further trial. The mortality in the twenty-six cases treated with adequate amounts of liver extract was 62 per cent. The mortality in the eighty-five cases treated with pentnucleotide was 35 per cent. At present it would appear that pentnucleotide in doses of at least 40 cc. a day is the most promising form of therapy in this disease.

New York State Journal of Medicine, New York

39: 963-1054 (May 15) 1939

Anatomicoradiographic Studies of the Spine: Changes Responsible for Certain Painful Back Conditions. L. A. Hadley, Syracuse.—p. 969.
Medical Academies: Past and Future. J. F. Fulton, New Haven, Conn.—p. 975.
Tuberculosis of Tendons, Tendon Sheaths and Bursas About the Hand. F. N. Potts, Buffalo.—p. 983.
The National Health Program. H. Emerson, New York.—p. 990.
*Otogenic Nonsuppurative Encephalitis: Clinical Entity. M. Atkinson, New York.—p. 994.
Tumors of the Mediastinum. N. C. Foot, New York.—p. 999.
Influence of Industrial Medical Work on General Health and Medical Science. R. R. Sayers and R. R. Jones, Washington, D. C.—p. 1005.
Syphilis Control: Administrative and Epidemiologic Aspects. C. A. Sargent, Buffalo.—p. 1011.
General Reflections on Psychosomatic Monism. S. E. Jelliffe, New York.—p. 1017.
Accessory Urethra: Report of Two Cases with Review of Literature. O. S. Lowsley, New York.—p. 1022.

Otogenic Nonsuppurative Encephalitis.—Atkinson asserts that, when localizing cerebral signs appear in the course of an adjacent suppurating focus in the skull, the most likely diagnosis is brain abscess but that there are times when exploration reveals no abscess. An area of infection that has not broken down may cause a localized nonsuppurative encephalitis, in which case exploration is not only unnecessary but often dangerous. The condition is more common than is generally appreciated. The author encountered fifteen such cases; the

total reported is twenty-five. As with abscess, the condition is most common in the temporal lobe secondary to ear disease. The pathologic changes of localized nonsuppurative encephalitis are those of localized cerebral infection in general and in essentials are the same as those of inflammation in any part of the body. Otogenic nonsuppurative encephalitis presents the signs of a focal cerebral lesion associated with an active or recent suppurative focus in an ear or nasal sinus. There are three stages of the process. 1. The salient feature of serous encephalitis is the onset with a convulsion, after recovery from which the patient is found to have focal cerebral signs. The attack may be single or it may be repeated. After each attack the focal signs are more marked. In every case a dural lesion, commonly an extradural abscess, is found and treatment of this and of the original focus results in permanent disappearance of focal signs within forty-eight hours. All patients with a suppurating lesion in the skull in whom a convulsion supervenes should be explored without delay in the expectation of finding some dural lesion. 2. Chronic infective encephalitis offers the greatest difficulties in diagnosis. With a nonsuppurating area of encephalitis, headache is apt to be severe and continuous, eyegrounds commonly show slight changes and fever is present. But the sign of greatest value in differential diagnosis is in the spinal fluid; hundreds of polymorphonuclears are found, as against tens of mononuclears in abscess. In encephalitis clinical signs and spinal fluid signs rise and fall together, while when suppuration and localization are present physical signs increase and the spinal fluid signs decrease: the dissociation syndrome emphasized by Borries. 3. Acute infective encephalitis gives a characteristic clinical picture. There is mental excitement, even noisy delirium different from the drowsiness or stupor of an abscess patient; the clinical signs are widespread from an early stage, fever may be high with a corresponding pulse, and the patient rapidly becomes gravely ill; there is often papilledema, and the spinal fluid shows an increased cell count in the hundreds, the greater proportion being lymphocytes, which suggest a nonpyogenic organism. Exploration should be avoided unless a diagnosis can be made by no other means. To incise an area of inflammation before suppuration has occurred is the surest way to provoke it and to spread the infection. But exploration of the focus of infection and of the neighboring dura is incumbent, with appropriate surgical treatment of any lesion found. At the same time a local decompression by free removal of bone should be made. Other positive measures are such as may also be used for a tumor with increased pressure: hypertonic solutions, limitation of fluid intake, catharsis and lumbar punctures. In chronic cases hypertonic solutions are not recommended. Their use may induce a false sense of security, and the improvement in symptoms occurring as an abscess localizes may be ascribed wrongly to the good effects of the sucrose.

Northwest Medicine, Seattle

38: 157-192 (May) 1939

Physical Diagnosis in Heart Disease. E. E. Osgood, Portland, Ore.—p. 160.
Massive Doses of Foreign Protein in Intra-Ocular Infection. R. S. Fixott, Portland, Ore.—p. 165.
Lesions of the Tongue. D. V. Trueblood, Seattle.—p. 166.
Modern Concepts in Measles Control. A. Weinzirl, Portland, Ore.—p. 170.
Cheyne-Stokes Respiration: Theophylline-Ethylenediamine in Treatment. D. E. Forster, Portland, Ore.—p. 172.
Thrombotic Embolism: Pathologic, Clinical and Medicolegal Consideration. W. C. Hunter, Portland, Ore.—p. 173.
Diagnosis and Treatment of Mild Depressions. F. Lemere, Seattle.—p. 177.
*Treatment of Skin Cancer by Electrothermy and Roentgen Ray. J. C. Hathaway and R. L. Howard, Spokane, Wash.—p. 180.

Electrothermy and Radiation for Cutaneous Cancer.—For the last eight years Hathaway and Howard have used a combination of electrothermic destruction and roentgen radiation in the treatment of cutaneous cancer. Of the 183 cases that they were able to check up on by personal observation or questionnaire they find that, if they assume that the nine patients who died of other causes would not have suffered a relapse, there were 175 (95.6 per cent) clinical cures for from one to eight years. The five patients who returned with recurrence were all retreated and have to date shown no sign of recrudescence. Of the three patients whose deaths were due to cancer, one had refused obviously indicated radical therapy, another had failed to return for a period of two years, and all three had long neglected highly malignant lesions.

Oklahoma State Medical Assn. Journal, McAlester

32: 113-160 (April) 1939

Internal Derangements of the Knee. D. H. O'Donoghue, Oklahoma City.—p. 113.
Management of Pulmonary Tuberculosis. C. A. Thomas, S. C. Davis and R. A. Wilson, Tucson, Ariz.—p. 118.
Autonomic Nervous System. C. J. Roberts, Enid.—p. 130.

Public Health Reports, Washington, D. C.

54: 725-764 (May 5) 1939

Aquatic Life in Waters Polluted by Acid Mine Waste. J. B. Lackey.—p. 740.

54: 765-814 (May 12) 1939

What People Ask About Health. R. Olesen.—p. 765.
Ariboflavinosis: Report of Three Cases. J. W. Oden, L. H. Oden Jr. and W. H. Sebrell.—p. 790.
Sylvatic Plague: Studies of Predatory and Scavenger Birds in Relation to Its Epidemiology. W. L. Jellison.—p. 792.

Rhode Island Medical Journal, Providence

22: 71-88 (May) 1939

Chronic Prostatitis. H. K. Turner, Providence.—p. 71.
Diversion, Relaxation and Sleep. E. S. Wing, Providence.—p. 73.

Texas State Journal of Medicine, Fort Worth

35: 1-66 (May) 1939

Roentgenologic Diagnosis of Thoracic Diseases Other Than Tuberculosis. W. G. Scott, St. Louis.—p. 5.
Protection in Fluoroscopy. C. A. Stevenson, Temple.—p. 12.
Endometriosis: Pathology, Surgery and After-Treatment. M. W. Sherwood, Temple.—p. 16.
Diagnosis and Treatment of Tubal Pregnancy. W. P. Lowry, Wichita Falls.—p. 19.
Some Observations on Anatomy of Female Pelvis. C. A. Smith, Texarkana.—p. 24.
Etiology and Pathology of Bronchiectasis. S. Hulsey, Fort Worth.—p. 29.
*Laryngologic Aspect of Hematopoietic Disease. J. J. Shea, Memphis, Tenn.—p. 33.
Adaptation of Type of Cataract Operation to Individual Case. F. H. Newton, Dallas.—p. 38.
Merits of the Tuberculin Test in Public Health Work. W. D. Anderson, San Angelo.—p. 42.
The Need for Dental Hygiene in a Public Health Program. F. C. Elliott, Houston.—p. 44.

Laryngologic Aspect of Hematopoietic Disease.—Shea discusses some of the laryngeal characteristics of the primary blood diseases. The usual initial lesion of granulocytopenia produced in the pharynx consists of a necrotic ulcer of one of the pillars, accompanied by a localizing swelling of the region suggestive of a peritonsillar abscess. The hematopoietic response to a streptococcic infection of the upper part of the respiratory tract and throat should be a polymorphonuclear leukocytosis with a shift to the left of the Schilling hemogram and occasionally the increase will be 20,000 or better. The initial involvement may be a simple surface inflammation of any or all of the mucous linings of the nose and throat. Extension superficially or deep into the glands will be accompanied by edema. The disastrous edema occurs in the larynx and is more dangerous to younger patients. Infants with severe streptococcic infections of the throat frequently require surgical relief. The infection of Vincent's angina seldom changes the blood count, but occasionally there occurs a hemic response to an overwhelming invasion of the organisms of Vincent's. This response is a lymphocytic leukocytosis with a hypogranulocytosis. The lesions in the throat in infectious mononucleosis vary from slight ulcerations to extensive inflammations, and the bacterial study of direct smears and cultures gives no help. The presence of Vincent's organism in the direct smear is common if there is an anaerobic recess, as under a membrane covering a slough. Acute lymphadenosis is a rare disease. The clinical picture of the mouth and throat begins with a simple and innocent looking angina or gingivitis, which is followed by hypertrophy of the lymphoid tissue producing islands throughout the visible surfaces of the mouth and throat. The tongue swells, becomes dry and is coated with dry blood; minute

hemorrhages ooze from the multiple lesions; swallowing becomes difficult and painful and the terminal days are pitiful; as the glands of the neck extensively enlarge, the face becomes swollen. Leukemia may be myeloid or lymphoid and surgical intervention should be avoided during the undiagnosed stage of the disease. It is a good practice to have a routine hemogram of all surgical tonsil patients before operation, so as not to discover after operation an uncontrollable oozing, because one may have been guilty of removing the tonsils of a leukemic patient. The lymphoid tissue of the throat and mouth hypertrophies, especially in the lympathic type, and as in lymphadenosis islands appear on the gums and other mucoid surfaces and the glands of the neck share in the general glandular enlargement. Paralysis of the cranial nerves is not uncommon, especially of the facial nerves.

Virginia Medical Monthly, Richmond

66: 317-380 (June) 1939

Present Status of Medical Treatment of Peptic Ulcer. T. D. Davis, Richmond.—p. 317.
Clinical Manifestations of Acute Rheumatic Fever: Age Incidence, Diagnosis and Treatment. J. F. Waddill, Norfolk.—p. 322.
Alcohol or Candy. B. R. Tucker, Richmond.—p. 329.
Bronchiectasis: Consideration of Its Causes and Its Prevention. L. H. Clerf, Philadelphia.—p. 332.
Nutritional Deficiency Disease, with Special Reference to Vitamin B Deficiency. O. L. Hite, Richmond.—p. 335.
Mortality from Malaria in the United States. J. B. Nichols, Washington, D. C.—p. 339.
Lymphedema of Extremities. E. L. Lowenberg, Norfolk.—p. 345.
Imperforate Hymen: Report of Case. J. Kotz and M. S. Kaufman, Washington, D. C.—p. 355.
The Healing Process: General Principles. M. H. Todd, Norfolk.—p. 357.

West Virginia Medical Journal, Charleston

35: 201-248 (May) 1939

Modern Surgical Treatment of Cancer of Rectum and Rectosigmoid. F. W. Rankin, Lexington, Ky.—p. 201.
Carcinoma of Larynx. L. H. Clerf, Philadelphia.—p. 206.
Treatment of Pneumonia with Sulfapyridine. J. Basman and W. L. Cooke, Charleston.—p. 209.
Sulfapyridine (Dagenan) Therapy. J. L. Blanton, Fairmont.—p. 216.
Endocervicitis. W. S. Gardner, Baltimore.—p. 222.
Treatment of Meningococcic Meningitis. E. S. Brewster, Elkins.—p. 224.
Typhoid-Paratyphoid Fever in Children. M. E. Farrell, Clarksburg.—p. 227.
*Migraine: Pituitary Study. R. O. Halloran, Charleston.—p. 233.

35: 249-296 (June) 1939

Treatment of Endemic Goiter and Severe Hyperthyroidism. G. Crile Jr., Cleveland.—p. 249.
Critical Analysis Regarding Periodic Physical Examinations. J. J. Brandabur, Huntington.—p. 258.
Gastrointestinal Aspects of Deficiency Disease. J. Friedenwald and S. Morrison, Baltimore.—p. 267.
The Thymus Gland in Infants and Children. H. R. Connell, Bluefield.—p. 273.
Infantile Acrodynia. H. C. Davis, Bluefield.—p. 277.
Treatment of Diabetes with Insulin. R. J. Snider, Wheeling.—p. 280.

Migraine and the Pituitary.—Halloran proposes that migraine is due to swelling of the pituitary gland, which creates compression of the cavernous sinuses resulting in congestion of the whole venous system of the skull. Pressure on the pain papilla within the walls of the dural sinuses creates the headaches. The various components of migraine are thought to be pressure phenomena having their origin in the nerve structures in and about the cavernous sinuses and sella turcica. It is further proposed that ergotamine tartrate (gynergen) decreases the vascular bed of the skull and brain, which in turn relieves the congestion and headache. The depression following migraine is thought to be due to accumulation of metabolites in the sensorium. Thus many mental states may be due to anoxemia of the brain. Further studies are indicated in the use of ergotamine tartrate and oxygen in the treatment of mental ills, acute alcoholism and delirium tremens. A close analogy is suggested between migraine, epilepsy and eclampsia. The periodic attacks of migraine are in keeping with the periodic fluctuations of the pituitary. There are many cases of migraine due to allergy. The author feels that explanation of this may lie in the fact that the anterior lobe of the pituitary is derived from the pouch of Rathke, from which nasal mucosa is derived. The latter is allergic. Hence it is not unlikely that the anterior lobe is an allergic shock tissue and responds to allergens by swelling.

Wisconsin Medical Journal, Madison

38: 345-432 (May) 1939

Medical Management of Chronic Prostatitis. H. L. Kretschmer, Chicago.—p. 363.
Fluoroscopic Technic for Nailing Fractures of Neck of Femur. L. V. Littig, Madison.—p. 373.
*Clinical Uses of Sex Hormones in Gynecology. B. E. Urdan, Milwaukee.—p. 375.
Important Factors in Conservation of Hearing. H. B. Hitz, Milwaukee.—p. 382.
Psychiatric Problems of the General Practitioner. R. E. Mitchell, Eau Claire.—p. 385.

Clinical Uses of Sex-Endocrine Products in Gynecology.—Urdan discusses some of the clinical uses of sex-endocrine products in various gynecologic disorders. Amenorrhea is generally due to failure of the anterior pituitary gland or of the ovary or occasionally to failure of uterine development. Thyroid disturbances, especially hypothyroidism associated with obesity, frequently cause amenorrhea. Insufficient secretion of anterior pituitary gonadotropic substance is the most common cause. Treatment with hypophysial extracts is the method of choice. Estrogen is of use in amenorrhea to combat uterine atrophy and is followed by menstruation in women who have a fair degree of ovarian function. The successful endocrine treatment of most severe cases of amenorrhea will depend on the elaboration of a potent gonad stimulating product. In functional uterine bleeding there is merely an exaggerated proliferative phase of the endometrium with inadequate luteinization and thus the condition is really due to disturbed function of the anterior pituitary gland. Progestin is used in the treatment of functional hemorrhage, but the treatment is purely substitutive and the effect is temporary. In the evaluation of the problem of functional dysmenorrhea the development, the hormone control and the nervous control of the uterus must be considered along with the constitutional and nervous makeup of the individual. The property of progestin of overriding the stimulating action of estrogen would indicate its use in dysmenorrhea. Estrogen in dysmenorrhea seems indicated only in those individuals with hypoplastic uteri. The most spectacular results with estrogen are obtained in patients suffering from the symptoms of the artificial or natural menopause. The author's form of therapy, with almost complete relief in all cases, is 4,000 rat units of estradiol benzoate twice a week for from four to eight weeks until the symptoms are controlled. This is followed by emmenin in doses of one teaspoonful daily. The oral method as a rule controls patients suffering recurrences and no hypodermic medication is necessary. The change of the immature epithelium to the adult type of vaginal mucosa and the increased acidity of the vaginal mucosa incident to estrogen medication appear to play an important part in the eradication of gonorrheal vaginitis in children. The author's method of treating senile vaginitis is 2,000 international units of estrogen three times a week for from four to six weeks. Occasionally vaginal suppositories of estrogen are given as supplementary treatment. In functional sterility the gonad stimulating principle is best given in two or three divided doses just prior to the expected ovulation. Estrogen has been used in sterility associated with amenorrhea, hypomenorrhea and infantile uteri with occasional success. However, the gonad stimulating principles are preferred. The use of progestin in cases of habitual abortion has a definite experimental background (Corner). When avitaminosis, hypothyroidism, deficient spermatogenesis and systemic diseases are not the causal factors in habitual abortion the use of an endocrine substance is indicated. Of the author's eleven patients who have had two or more spontaneous abortions for which there was no apparent cause, ten have delivered normal infants following the use of corpus luteum extract. The remaining patient aborted at eleven weeks. One patient had a subsequent normal birth without treatment; another was allowed to proceed in her second pregnancy without the extract but developed signs of threatened abortion which were controlled by the use of progestin. Of thirteen patients with threatened abortion, only four went to term despite the fact that treatment was instituted early. In the other nine cases symptoms continued with subsequent abortion. Treatment in the successful cases was continued through the sixteenth week of pregnancy, one international unit being given twice a week after the symptoms subsided.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

20: 109-200 (April) 1939

Properties of Antigenic Preparations from Brucella Melitensis: II. Serologic Properties of Antigens. A. A. Miles and N. W. Pirie.—p. 109.
Carcinogenic Agents Present in Atmosphere and Incidence of Primary Lung Tumors in Mice. J. A. Campbell.—p. 122.
Action of Proteolytic Enzymes on Antitoxins and Proteins in Immune Serums: I. True Digestion of Proteins. C. G. Pope.—p. 132.
Cultivation of Virus of Aujeszky's Disease on Chorio-Allantoic Membrane of the Developing Egg. R. E. Glover.—p. 150.
Immunologic Relationship of Virus of Spontaneous Cowpox to Vaccinia Virus. A. W. Downie.—p. 158.
Type of Group A Hemolytic Streptococcus Which Fails to Form Peroxide. A. T. Fuller and W. R. Maxted.—p. 177.
Size of Virus of Lymphocytic Choriomeningitis as Determined by Ultrafiltration and Ultracentrifugation. T. F. M. Scott and W. J. Elford.—p. 182.
Interrelationships Between Amino Acids in Nutrition of Bacillus Anthracis. G. P. Gladstone.—p. 189.

British Journal of Rheumatism, London

1: 217-284 (April) 1939

Physical Treatment and the Rheumatic Knee. J. Mennell.—p. 220.
Chorea. B. Schlesinger.—p. 229.
Periarticular Fibrositis of Shoulder. R. G. Abercrombie.—p. 236.
Pathology of Osteo-Arthritis. D. H. Collins.—p. 248.
Drug Treatment in Chronic Rheumatic Diseases. P. Ellman.—p. 263.

British Medical Journal, London

1: 759-808 (April 15) 1939

The Listerian Idea in the Year 1939. R. Leriche.—p. 759.
Observations on Surgical Treatment of Thyrotoxicosis. J. W. Linnell and G. Keynes.—p. 764.
*Biologic Pregnancy Diagnosis Tests: Comparison of the Rabbit, the Mouse and the "Clawed Toad" (Xenopus Larvis) as the Experimental Animal. F. A. E. Crew.—p. 766.
*The Sign of the Clavicle. E. C. Dax and R. M. Stewart.—p. 771.
Bronchography Without Cocaine. E. C. O. Jewesbury.—p. 772.
Insulin as Dressing for Chronic Indolent Ulcers. A. R. Hunter.—p. 773.

Biologic Pregnancy Diagnosis Tests.—Crew compared the biologic pregnancy tests and asserts that the Hogben test (using the toad Xenopus laevis) can replace the Friedman rabbit test but not the Aschheim-Zondek mouse test. The toad can give a trustworthy positive result within six to fifteen hours, as compared with the twenty-four to forty-eight hours needed if the rabbit is used. The toad is better than the rabbit for use in those cases in which a definite positive or an emphatic negative is the answer, especially when the result is urgently required. With the present methods of preparation, however, the toad does not give the graded results yielded by the mouse. It may be shown later that differences in the number of eggs extruded are indeed true reflections of corresponding differences in hormone concentration, but for the present the mouse must be retained.

The Sign of the Clavicle.—Among 2,000 mental defective patients Dax and Stewart found sixty-four with congenital syphilis. They reexamined these to determine the incidence of enlargement of the sternal end of the clavicle. Higouménakis has stated that this sign is one of the most common stigmas of congenital syphilis. The clavicles of 1,200 nonsyphilitic patients have been examined as controls. Palpation gives more information as to size and shape than a single roentgenogram. From an analysis of their material the authors differentiated five types of abnormality, two or more of which may be found in the same patient: (1) a generalized enlargement of the sternal end, (2) an exostosis projecting from the inner end of the bone, (3) a roughening of the inner third, (4) a thickening of the posterior surface of the outer third or an enlargement of the middle of the bone and (5) a tubercle at the point of origin of the clavicular head of the sternomastoid muscle. If any of the first three abnormalities were present to a marked degree in a case of congenital syphilis they classed this as a positive result. Minor deformities were found to be common even among normal persons. Nineteen of the sixty-four cases of congenital syphilis show gross abnormality of the inner ends of the clavicles, in the form of general enlargement, exostoses or roughening. The 1,200 controls represented examples of all degrees of mental disorders. Thirty-nine of the 600 men and twenty-six of the 600 women examined have marked clavicular enlargement similar to that observed in the cases of congenital syphilis. No obvious relation between the hand used and the enlarged clavicle was found to exist in either the patients with congenital syphilis or the control group. Not a single case of congenital syphilis was observed with gross enlargement of the clavicle on the one side that was not accompanied by some degree of deformity on the other. The authors give possible explanations for the difference in their results from those recorded by Higouménakis and others: 1. The sign may be produced in its fully developed form only when the patient has done manual labor. If this is so, the majority of their patients are incapable of sustained work. 2. All the controls with enlargements might be unrecognized cases of congenital syphilis without other stigmas or positive serologic reactions. This does not seem to be remotely possible; even if it were, the bilateral distribution of the lesions would still demand explanation. 3. The enlargements may be of a different type from those described by Higouménakis, in which case the sign would obviously have little value as a stigma of congenital syphilis. On the other hand, if the lesion in their nineteen cases of congenital syphilis is identical with that described by Higouménakis, its distribution is certainly not unilateral, and since it can occur in normal controls it cannot be accepted as reliable evidence of congenital syphilis.

Glasgow Medical Journal

13: 157-204 (April) 1939

Undulant Fever: Review with Report of Case. Alice K. Montgomery.—p. 157.
Critical Review of Steinach II Operation as a Method of Treating Prostatic Obstruction. A. Jacobs.—p. 166.

Journal of Laryngology and Otology, London

54: 173-232 (April) 1939

Stereoradiography and Radiographic Analysis. C. Chaussé.—p. 173.
Combined Method for Localization and Extraction of Radiopaque Objects by Means of "Light Compasses." C. Chaussé.—p. 181.
Radiology of Mastoid Process. H. G. Hodgson.—p. 187.

Journal of Neurology and Psychiatry, London

2: 97-192 (April) 1939

Vasomotor Reactions in Hypnotic State. J. Doupe, W. R. Miller and W. K. Keller.—p. 97.
*Brain Potential Changes in Man Induced by Metrazol. M. A. Rubin and C. Wall.—p. 107.
Effect of Cardiazol Convulsions on So-Called "Bulbocapnine Catatonia" in Monkey. A. Kennedy.—p. 115.
Clinical Study of Effects of Short Periods of Severe Anoxia, with Special Reference to Mechanism of Action of Cardiazol "Shock." R. Fraser and F. Reitmann.—p. 125.
Blood Supply of Human Spinal Cord. B. Bolton.—p. 137.
Unusual Case of the Grasp Reflex, with Some Observations on Volitional and Reflex Components. A. M. Stewart-Wallace.—p. 149.

Brain Potential Changes Induced by Metrazol.—Rubin and Wall recorded the brain potentials of eleven schizophrenic patients given twenty-eight injections of metrazol. The records were started five minutes before the injection and continued up to one hour in some instances. Characteristic alterations of the electro-encephalogram were observed when metrazol evoked an emotional response or a seizure. When neither of these reactions occurred there were no changes in the electrical activity of any of the major regions of the cerebral cortex. The cortical response to metrazol may be divided into three types. 1. The alpha (ten per second) rhythm was slowed to about six per second, when only a mild emotional reaction, usually appearing as a momentary look of apprehension, was induced by metrazol. 2. As a rule the electrical activity of only the frontal lobes was appreciably altered during a severe emotional episode. The time for complete reestablishment of the premetrazol electro-encephalogram was directly proportional to the severity of the emotional response; the more severe the response, the longer the recovery time. 3. During a metrazol seizure large (250 microvolts) waves appear from six to twenty seconds after the injection of metrazol, marking the first myoclonic stage, and continue for from three to ten seconds. During the tonic stage, which occurs from fifteen to thirty seconds after injection and lasts for from ten to thirty seconds, the electro-encephalogram is characterized by high voltage spikes which have the frequency of muscle poten-

tials. The second clonic phase occurs from thirty to fifty seconds after the metrazol injection, lasts from twenty-five to forty seconds and is associated with cortical potentials at three to four per second and 1,000 microvolts in amplitude; they become slower, decrease in voltage, and appear with a spike component toward the end of the seizure. Immediately on cessation of the convulsions, at which time the patient may exhibit severe emotional symptoms, the amplitude of the potential changes dropped markedly and the pattern was one of even slower, but more irregular, activity for the next five to ten minutes. The final phase, lasting until the patient was fully recovered, consisted of an increase in frequency and a dropping out of the irregular, slow waves. This last phase exhibits two of the properties of the electro-encephalogram during sleep: (1) the predominant activity shifted back and forth from an almost completely recovered level to one resembling the stage immediately following the seizure, and (2) as early as ten to fifteen minutes before the patient opened his eyes and spoke spontaneously he would respond to requests by speech or by movement. The electro-encephalogram reverted to the premetrazol level while the patient was responding to the request. Immediately after this the "drowsy" potential pattern typical of this phase reappeared. These two changes correspond to the shifts in the level of the cortical activity during sleep which occur spontaneously and on arousing the attention of a sleeping subject.

Lancet, London

1: 859-912 (April 15) 1939

Surgical Anatomy of Subtentorial Angle, with Special Reference to Acoustic and Trigeminal Nerves. E. P. Stibbe.—p. 859.
Cushing's Syndrome: Report of Case in Which No Endocrine Tumor Was Found. G. Hall, C. E. Kellett and G. E. Stephenson.—p. 862.
Poliomyelitis with Bilateral Paralysis of Masticatory Muscles: Case. O. Sittig and J. Urban.—p. 865.
*Therapeutic Action of Sulfapyridine in Urinary Infections. G. Melton, with bacteriologic note by A. Beck.—p. 867.
Type III Pneumococcus Pneumonia: Effect of Sulfapyridine. G. Alsted.—p. 869.
*Serum Potassium and Serum Calcium in Insulin Shock Therapy. J. L. Clegg.—p. 871.
Oxalate or Citrate for Sedimentation Test? Norah H. Schuster.—p. 872.
Recurrent Intussusception in Young Child. I. Fraser.—p. 874.

Sulfapyridine in Urinary Infections.—Melton used sulfapyridine in the treatment of seventy-one cases of cystitis and pyelitis. Of nineteen cases of cystitis twelve were cured and of fifty-two cases of pyelitis forty-four were cured. There were fifteen failures. There were fifteen instances of pyelitis of pregnancy, in twelve of which cures were obtained. The patients with either condition responded readily to treatment and were cured after a period of three to seven days, except two whose treatment was prolonged for ten days. One patient with acute cystitis had retention of urine after acute poliomyelitis. Most of those with pyelitis of pregnancy were cured in a few days, and one of them with an unidentified non-lactose fermenting coliform organism responded to sulfapyridine after failing to do so to sulfanilamide. Of the patients with chronic pyelitis who were cured, one had renal calculi and had previously been unsuccessfully treated with sulfanilamide. Among those with chronic cystitis who were cured, two were suffering from diabetes mellitus and one had undergone prostatectomy. The commonest organism encountered in this series was Bacterium coli. Occasionally other organisms were found alone or together with Bacterium coli. Of these, Bacillus pyocyaneus and Staphylococcus albus responded well to treatment. On the other hand, Streptococcus faecalis was resistant to sulfapyridine in the same way as it is to sulfanilamide, though one case of pyelitis of pregnancy caused by this organism was cured. Infections with Bacillus proteus showed a varied response, for, although cures were obtained in several instances, some of the chronic cases did not clear up. In general, failure was encountered in chronic urinary infections with a focus of infection, such as a calculus or bladder diverticulum or with retention of urine—particularly when these conditions were associated with renal impairment and other debilitating states, such as old age and anemia. A further factor in failure was the presence of mixed bacterial infections. However, the presence of the foregoing complications does not necessarily prevent cure.

Serum Potassium and Calcium in Insulin Shock Therapy.—Clegg chose four male patients at random, all having been under treatment by hypoglycemic shocks for at least two months. At varying intervals blood examinations were made; the serum potassium and serum calcium were estimated before the morning injection of insulin and again just before the interruption of coma. Twenty observations on the serum potassium and seventeen on the serum calcium were made. Except on four occasions, the precoma level of the blood potassium was always above the normal, i. e. from 19 to 21 mg. per hundred cubic centimeters and often markedly so, and in no case was it below normal. The precoma level of the blood calcium was normal, i. e. from 10 to 11 mg. per hundred cubic centimeters in twelve of the seventeen estimations, and in the remaining five there was only a slight increase. It was found that the "resting" potassium fluctuates, but always above the normal level. During coma the potassium tends to fall below its precoma level. The "resting" calcium only occasionally deviates from the normal and then always above the normal level. During coma the calcium tends to remain at its precoma level. During coma the potassium calcium ratio tends to fall.

Medical Journal of Australia, Sydney

1: 529-564 (April 8) 1939

Hematomyelia. O. Latham.—p. 529.
Introduction of Smith-Petersen Nail by Hey Groves Technic. W. E. Harrison.—p. 535.
Diaphysectomy in Treatment of Acute Osteomyelitis of the Fibula. N. M. Harry.—p. 536.
Foetus Amorphus. I. Brodsky.—p. 539.
Septic Arthritis of Knee Joint. H. A. Sweetapple.—p. 542.
Note on Occurrence of Fatal Psittacosis in Parrots Living in Wild State. F. M. Burnet.—p. 545.

Tubercle, London

20: 253-300 (March) 1939

Pathogenicity of BCG After Prolonged Cultivation on Glycerinated Egg Medium. W. H. Feldman.—p. 253.
Partial Scapulectomy in Selective Upper Thoracoplasty. R. H. Overholt and O. S. Tubbs.—p. 263.
*Abscess of the Lung: Clinical Study. R. Viswanathan.—p. 268.
Cadmium Sulfide in Treatment of Pulmonary Tuberculosis. J. S. Robertson.—p. 275.
Results of Phrenic Evulsion in Upper Lobe Cavitation After Six Years. A. W. Russell.—p. 277.

Abscess of the Lung.—Viswanathan presents a clinical study of thirty-two cases of abscess of the lung, that is a solitary collection of pus within destroyed lung parenchyma. The right lung was involved in seventeen and the left lung in fifteen cases. Lung abscess has been found to be more common between the ages of 20 and 40. There is always a preponderance of males in the proportion of three or four to each female. In the present series twenty-six were males and six females. All but two of the cases were primary or idiopathic, no history of operation or pneumonia was available in twenty-eight cases and two cases were secondary to bronchiectasis. Available literature shows that no single organism can be considered to be the causative factor in abscess of the lung. This was confirmed by cultural examinations and in most of which staphylococci, streptococci, pneumococci, Friedländer's pneumobacilli, fusiform bacilli and spirilla were found in different combinations. In only one case in the present series were pneumococci found in pure culture both in the sputum and in the pus removed directly from the abscess cavity during operation. Fusiform bacilli and spirilla were found in only seven cases. The pathogenesis of idiopathic pulmonary suppuration is difficult to determine. The infecting organisms may be brought to the lung by either the blood or the lymph stream. In some cases the abscess may result from a mild or abortive pneumonia or from a form of pulmonitis recently described by Scadding (1937) as disseminated focal pneumonia. The disease started insidiously with malaise, irregular fever and slight cough in eight cases. In twenty cases the onset was sudden. In five cases it started with fever alone, lasting for more than two weeks before other symptoms such as pain, cough and expectoration occurred. Cough was the first symptom in three cases. Fever, pain and cough occurred more or less simultaneously in twenty cases. Purulent expectoration was present in twenty-six instances for from five days to five weeks after the onset of the disease. The sputum was foul smelling in twenty-two. Hemoptysis of varying degree was noticed in sixteen cases, but only once was the onset heralded

by severe spitting of blood and fever. Clubbing of the fingers developed in four. Pain over the chest is common in abscess of the lung irrespective of its anatomic location, the character of the pain being a dull ache over the chest, continuous and not related to respiratory excursions except when there is associated pleurisy. Physical signs vary with each case and depend on the area involved. Often they were so few as to lead to doubts and sometimes errors in diagnosis. Abscess of the lung generally appears in the roentgenogram as a circumscribed opacity of more or less uniform density. When there is air and pus inside the abscess cavity, a fluid level can be seen. Sometimes the shadow of the abscess is irregular at the margins owing to pneumonic consolidation in the neighboring lung tissue. Rapid changes in the size and shape of the shadow, as revealed by serial roentgenograms, suggest spreading gangrene of the lung. The prognosis is serious. Opening and draining the abscess externally was resorted to in ten cases with five deaths; pneumothorax was induced in four with one death. Eighteen patients were subjected to various medical treatments; five recovered completely, three absconded, three preferred to discharge themselves against medical advice and the remaining seven died. Generally, it is advisable to try conservative measures in acute cases such as rest and postural treatment. Various drugs have been tried. The sulfonamide group of drugs, particularly injections of benzylsulfanilamide, was tried in four cases. In the first patient so treated the temperature was normal within four days. Unfortunately he refused to remain in the hospital for the completion of the treatment, but inquiries made after three months elicited the information that he was alive and healthy. In the second case there was decided improvement both clinically and roentgenologically, but an abscess developed in the brain (confirmed at necropsy) one month later. The remaining two patients were completely cured within from one to three months after the sulfonamides were started. If after six weeks of medical treatment the patient does not recover the abscess should be fully tried in a small percentage of cases in which the abscess is away from the periphery of the lung and is freely communicating with the bronchus.

Chinese Medical Journal, Peiping

55: 301-406 (April) 1939

Minimum Nutritional Requirement for China. Report of the Committee on Nutrition, the Council on Public Health, Chinese Medical Association.—p. 301.
Suggestions for Feeding Refugees, or Other Groups, at Low Cost, as in Hospitals, Orphanages, School Dormitories, Work Camps, etc. Lois Witham, Annie V. Scott and Mary Katharine Russell.—p. 324.
*Value of Sweet Potato in Human Nutrition. W. H. Adolph and H. C. Liu.—p. 337.
Primary Thiersch Grafting in Radical Mastoidectomies, with Description of New Modified Technic. J. H. Liu and Y. H. Hsu.—p. 343.
Visualization of Amebic Liver Abscess. H. L. Chung, F. Y. Khoo, S. K. P. Chang and W. S. Ma.—p. 357.
Canine Leishmaniasis with Skin Lesions Observed in Peiping. L. C. Feng, H. L. Chung and R. Hoeppli.—p. 371.
Plague Work in Fukien: IV. Preventive Measures Adopted for Control of Plague at Lungyen: V. Rat and Flea Survey of Lungyen, Fukien. Y. N. Yang, E. Landauer, C. K. Koo and P. C. Lin.—p. 383.

Sweet Potatoes and Nutrition.—Adolph and Liu report the results in which sweet potatoes furnished practically the sole item of diet for from five to eight weeks for three human subjects. Nitrogen balances and metabolism rates were measured every four days. The white sweet potato of North China was used. Each subject determined at the beginning of the experiment the amount of sweet potato which could be comfortably eaten: this amount (on the uncooked basis) varied from 1.7 to 3.4 Kg. (1,700 to 3,400 Gm.) a day. The subjects ate three meals a day and the daily intake was maintained practically constant for each subject throughout the experiment. The sweet potatoes after removal of the skin were weighed and lightly fried in pork fat. The manner of cooking was not varied from day to day. In addition to the sweet potatoes, one subject received one pear daily and two subjects were given one bowl of cabbage soup a day. The nitrogen balance was maintained when the subject's daily intake of sweet potato approximated 2 (2,000 Gm.) or more kilograms. While the subjects continued in good health, on several occasions during the experiment they reported that they tired quickly when engaged in strenuous effort. This corresponds in general to the verdict of the North China farmer who asserts that sweet potatoes are inferior to millet as a strength-producing food.

Journal d'Urologie Médicale et Chirurgicale, Paris

47: 273-368 (April) 1939. Partial Index

*Results of Treatment of Cancers of Bladder by Implantation of Radium Needles in Open Bladder at One Time. R. Darget and J. Lange.—p. 273.
Index of Polypeptidemia in Urinary Surgery. E. Truc, P. Monnier and Mlle. A. Nicolas.—p. 287.
Transurethral Resection of Prostate. J.-B. Giscard.—p. 292.
Renal Decapsulation for Anuria in Course of Early Azotemic Nephritis of Scarlatina. Gournay and Busser.—p. 304.
Favorable Effects of Decapsulation in Case of Chronic Nephritis. P. Macquet and G. Patoir.—p. 311.
Simple Method of Nephropexy. Caraven.—p. 327.

Treatment of Vesical Cancer by Radium.—Darget and Lange review the results they obtained with radium treatment in sixty cases of cancers of the bladder. In eight of these cases a microscopic examination could not be made, but the malignant character was clinically evident. However, the authors subtract these eight cases and consider only the fifty-two cases in which the malignant character of the tumor had been histologically verified. These fifty-two patients had all been treated by the same method, namely by the implantation of radium needles into the opened bladder in a single session. Two types of malignant tumors can be differentiated: (1) the sessile tumors, namely those without pedicle in the restricted meaning but movable on the underlying musculature; (2) the infiltrated tumors. In the latter type three subgroups are differentiated: (*a*) those with beginning infiltration, the base of which is adherent and has lost its mobility, (*b*) those the base of which is manifestly infiltrated, (*c*) those which have ulcerated the vesical wall, the terebrating tumors, which were infiltrating from the beginning. After listing in a table the sixty cases of vesical cancers which were treated with their method of radium therapy, the authors reproduce several photomicrographs and show diagrams illustrating the introduction of the radium needles. Analyzing the results obtained in sixty cases, they say that the immediate operative mortality amounted to 3.3 per cent; that is, two of the sixty patients died in immediate connection with the operation. During the first two months following the operation, four of the patients died of azotemia and two died as the result of metastases. Estimating the late results obtained in the fifty-two cases that had been histologically verified the authors say that, of twenty-five cases that date back more than five years, survival to the present resulted in nine (36 per cent) and ten were cured (40 per cent); of the forty-five cases that date back more than eighteen months, survival to the present occurred in twenty-two; twenty-eight cures lasted more than two and one half years. Of thirty-three cases with infiltrating tumors, survival to the present occurred in nineteen; of the thirteen which date back more than five years, survival to the present occurred in five. Of the nineteen patients with sessile tumors, nine are still living; of the twelve that date back more than five years, four are alive but seven were cured, three having died of intercurrent diseases, while the local cure still persisted. To emphasize the efficacy of their form of radium therapy the authors point out that of fifteen patients with extremely grave forms of vesical cancer eight are still alive. They emphasize the necessity of careful surgical preparation, an exact technic, strict postoperative care and cystoscopic controls at regular intervals. They continue to advocate this treatment.

Presse Médicale, Paris

47: 649-664 (April 29) 1939

*Cranial Hypertension in Relation to Arterial Hypertension. Riser, J. Planques and Paulette Barbier.—p. 649.
Bone Conduction. M. Aubry and J.-C. Giraud.—p. 653.

Cranial Hypertension and Arterial Hypertension.—Riser and his associates present a study of the interrelations of cranial and arterial hypertension. Their observations are based on 140 patients, who were given 5,000 manometric measurements in strictly horizontal lateral decubitus. They find 20 cm. of water the maximal craniospinal pressure (with the average ranging between 15 and 18 cm.) for patients in recumbency and 48 cm. maximal for patients in the sitting position. The authors distinguish between uncomplicated and complicated arterial hypertension in relation to cranial hypertension. The former does not induce cranial hypertension, as the case history

of seventy-five of their patients reveals. On the other hand, complicated arterial hypertension often induces cranial hypertension in various phases. Of fifty patients, 34 per cent clearly showed cranial hypertension; twenty patients showed moderate cranial hypertension (from 23 to 30 cm.); ten from 30 to 35 cm., and four respectively 40, 48, 50 and 52 cm. Tests were made in the horizontal position. In three instances decubitus tests invalidated the normal readings indicated by tests made in the sitting position. The authors stress the importance of systematic examinations of the fundus oculi. Papillary edemas were particularly frequent in complicated arterial hypertension. In twenty-three of twenty-five patients, marked venous tension fluctuating between 15 and 40 cm. accompanied cranial hypertension. Toxic factors such as faulty metabolism of proteins, chlorides and water were also clearly causative of cranial hypertension. However, seven patients with pure azotemic nephritis and a urea content of from 2 to 3 Gm. remained unaffected by cranial hypertension. Seven patients with high cranial hypertension, on being subjected to rigorous disintoxication, with blood lavage in two cases, showed increased diuresis; abnormal chloremia and azotemia and cranial hypertension disappeared. Likewise a local intracranial lesion, such as cerebromeningeal edema, increased cranial hypertension in complicated arterial hypertension. Arterial hypertension may also be of central neurologic origin, secondary to a lesion or a functional disorder and so, of necessity, accompanied by cranial hypertension. Some of the practical consequences and symptomatic values deduced by the authors from their observations are noted. Uncomplicated arterial hypertension is never accompanied by cranial hypertension even if it has been high for a long time. They suggest that the tests be applied to determine the primary or secondary nature of cranial hypertension when this is clinically, ophthalmologically and manometrically established beyond doubt. Tests to determine between the presence of a cerebral tumor and a "pseudotumoral arterial hypertension" are neither difficult nor require a long time. In forty of fifty cases of arterial hypertension with pronounced cranial hypertension, diagnostic tests were directly determinative. Arterial and cranial hypertension unaccompanied by certain indications such as cardiovascular-renal disturbances, ophthalmologic signs and toxicity require especially careful tests—indicated by the authors—to determine the neurologic origin of the condition, to be supplemented, if necessary, by ventriculography. Sometimes ventriculography would show the absence of a tumor and the subsequent evolution would point to a serious and complicated arterial hypertension. Such cases are not numerous but need to be noted, as they reveal that all the factors of cranial hypertension coexistent with arterial hypertension are not known. In two instances the ophthalmologic and manometric indications of cranial hypertension preceded all the others by several years. The authors summarize their important observations in three groups: (1) coexistence of cranio-intracranial lesion and arterial hypertension without a close causal interrelationship, (2) central neurologic lesions inducing and controlling arterial hypertension and (3) arterial hypertension controlling cranial hypertension (the largest group).

Revue d'Orthopedie, Paris

26: 193-288 (May-June) 1939

Primary Hemangioma of Tarsus and of Metatarsus with Sarcomatous Alteration. M. Delitch.—p. 193.
*Habitual Dislocation of Knee Cap. F. E. Godoy Moreira.—p. 202.
Laxity of Elbow, Its Relations with Sprain, Its Treatment. E. Curtillet.—p. 215.
Isolated Fractures of Trochanter Major. F. de Moraes.—p. 223.
Subcutaneous Rupture of Long Extensor Tendon of Thumb. P. Roques and H. Sohier.—p. 230.
Multiple Osteogenic Exostoses. J. A. Phélip and A. Policard.—p. 236.
Isolated Fracture of a Supernumerary Bone of Tarsus (Os Peroneum): Treatment by Infiltration with Procaine Hydrochloride. L. Ginieys.—p. 243.
Spiking of Fractures of Neck of Femur Under Roentgenologic Control. E. Papin.—p. 248.

Habitual Dislocation of Knee Cap.—Godoy Moreira designates as habitual dislocations those which recur readily either in the course of ordinary movements or as the result of slight traumas that are readily tolerated by a normal articulation. Persons who are subject to habitual dislocation of the knee cap frequently take serious falls, sustain fractures and are likely to have serious street accidents. The disorder seems to be considerably more frequent in women than in men. That heredity plays a part in the etiology is indicated by the fact that familial occurrence has been reported a number of times. The dislocation is always outward. This fact finds its explanation in the morphologic alterations that are seen most frequently: capsuloligamentous aplasia, aplasia of the external condyle, internal rotation of the femur and external rotation of the leg, genu valgum with outward displacement of the unit formed by the tendon of the quadriceps, the patella and the patellar tendon. The most important anatomopathologic aspects of habitual rotular dislocation are (1) laxity and thinning of the articular capsule, sometimes tearing away of the internal lateral ligament and of the internal capsuloligamentous covering, (2) atrophy of the external condyle and (3) obliquity of the unit formed by the tendon of the quadriceps, the patella and the patellar tendon, which is displaced outward. Absence of the meniscuses and of the cruciate ligaments has also been observed. During the dislocation the pain may be slight or considerable. In the old and frequent dislocations the pain is nearly always slight, functional inadequacy being the chief symptom in these cases. In general, the patient complains that he becomes easily fatigued; he lacks confidence in his leg and it is difficult or even impossible for him to ascend and descend stairs. Roentgenograms that are taken during the dislocation show the patella from the side and lateralized, if the exposure is taken in the anteroposterior direction of the knee. During the interval, roentgenography explains certain details, for instance the existence of a more or less pronounced valgum. Another interesting point is the elevation of the patella, which the author had occasion to verify in two of the three reported cases. Regarding the prognosis he says that if treatment is neglected a serious infirmity may develop which may greatly impair the working capacity. Treatment is possible by means of a supporting apparatus, for instance that of Handeck, or by surgery. The treatment with the apparatus does not present a satisfactory solution and the patients themselves usually prefer a surgical operation. The author cites some of the numerous operations that have been recommended and suggests that it is advisable to choose that method which is best suited for the individual case. The selection should be based on a careful study of the pathogenic mechanism and of the anatomic changes. The author thinks that the following operations will be most frequently indicated: that of Roux, a modification of that of Krogins, that of Albert Mouchet and that of Albee.

Sang, Paris

13: 353-466 (No. 4) 1939

Quantitative Changes of Cytoplasm in Lymphocytes of Blood in Relation with Their Functional Activity. F. Mas y Magro.—p. 353.
Importance of Puncture of Spleen and of Bone Marrow in Erythremic Subleukemic and Aleukemic Myelosis. A. Forconi.—p. 380.
*Aspects of Bone Marrow in Mycosis Fungoides. S. Lapière and W. de Weerdt.—p. 393.
Test of Sedimentation Speed of Erythrocytes in Normal Guinea Pigs. P. Nicolle and H. Simons.—p. 401.

Bone Marrow in Mycosis Fungoides.—Lapière and de Weerdt state that the modifications of the structure of the bone marrow which occur in mycosis fungoides have been studied with the aid of sternal puncture only in a comparatively small number of cases. They review studies made by Santoianni, by Cottini and by Tzanck and his associates and then describe their own observations on eleven patients. In eight of them a cutaneous biopsy showed the existence of a malignant fungoid granuloma. Three clinical forms of the disease can be differentiated in the cases discussed here: the mixed circumscribed form of Alibert-Bazin, the erythrodermic form of Hallopeau and finally the form with tumors at the onset. Four of the eleven patients had reached the last period in the evolution of the mycosis, for they died several weeks after the examination of the bone marrow. In this report the authors summarize the hematologic observations and compare the results with those obtained in ten normal subjects. They found that it is the reticulo-endothelial reaction which constitutes the most typical medullary modification in the course of mycosis fungoides. This reaction varies greatly in intensity. In order to estimate it the authors compared the percentages found for the reticulo-endothelial cells, the monoblasts, the

lymphocytes and the histoid plasmocytes. Although together these elements amount to about 4.15 per cent in the normal state, in five of the cases they amounted to from 5 to 10 per cent and in four they amounted to more than 10 per cent with a maximum of 20 per cent. Only one of the cases observed by the authors attained values reported by Tzanck; thus such values must be regarded as exceptional. The histoid reaction was not constant. It was lacking in one of the cases of mycosis fungoides with tumors at the onset. The reticular cells were not always increased. They exceeded the normal values in only six of the cases. The medullary plasmocytes, which, with rare exceptions, are of histoid origin, exceeded the normal values in seven of the cases. But the histoid lymphocytes account for the greatest part of the observed changes. The authors were unable to find in the marrow of patients with mycosis fungoides cells that are characteristic for this disorder; the nuclear polymorphism cited by Tzanck is a weak differential characteristic. In the concluding summary they point out that the bone marrow of patients with mycosis fungoides may present the following modifications: (1) a polymorph histoid reaction, which is rarely missing but which remains rather discrete except in the advanced cases; (2) an inconstant eosinophilia, either existing alone or combined with eosinophilia of the blood. In advanced cases of the disease there may be added (3) an inhibition of the transformation of the metamyelocytes into neutrophil leukocytes and (4) disturbances in the maturation of the erythroblasts.

Schweizerische medizinische Wochenschrift, Basel

69: 357-380 (April 22) 1939. Partial Index

Respiratory Tetany. P. H. Rossier.—p. 357.
Pulmonary Infarct and Pulmonary Edema. L. Hess.—p. 360.
New Functional Test of Circulation. A. Fehr and H. Winzeler.—p. 364.
*Case of Transmission of Congenital Syphilis to Second Generation. L. Merlin.—p. 368.
Treatment of Surgical Tuberculosis with Rubrophen. H. Schaer.—p. 369.
Use of Leeches in Peritendinitis and Related Disorders. C. Petri.—p. 371.

Third Generation Syphilis.—Merlin thinks that not only the rarity but also the practical significance of observations on the transmission of congenital syphilis by the second generation justify the report of cases of this type. After describing the signs of congenital syphilis in a child who was born in 1938, he reports the observations on the mother, who had a strongly positive Wassermann reaction. The child's father was free from syphilis, as were also his parents. The mother of the woman, that is the grandmother of the child, had positive serologic reactions for syphilis, and the possibility of a venereal infection by her husband, who for ten years had had dementia paralytica, was admitted. The author points out that, according to Fournier, Finger and others, the following points must be fulfilled in order to establish the transmission of congenital syphilis to the second generation: 1. There must be definite proof of the existence of syphilis in the grandmother. 2. It must be proved that the mother did not acquire syphilis but that she has congenital syphilis. 3. There must be proof of congenital syphilis in the child. The author shows that in the reported case these requirements were fulfilled.

Rivista di Patologia e Clin. d. Tubercolosi, Bologna

13: 249-332 (April 30) 1939. Partial Index

*Lipases in Blood Serum in Pulmonary Tuberculosis. G. Tosi.—p. 249.
Pluriphasic Tuberculosis of Refractory Organs (Pancreas, Stomach and Esophagus) with Aspects Similar to Those of Lymphogranulomatosis. V. Chiodi.—p. 266.

Lipases in Blood Serum in Pulmonary Tuberculosis.—Tosi determined the lipases in the blood serum of thirteen normal persons and of forty-five patients who were suffering from pulmonary tuberculosis of either the exudative or the productive type. He found that the lipolytic index of the blood serum (including blood lipases and lipases which are resistent to atoxyl and to quinine) is normal in the benign form of exudative or productive tuberculosis and is diminished in grave forms of the disease. In the course of the disease the lipolytic index of the blood serum increases with the local and general improvement of the patients, either from an organic reaction to proper medical treatment or from satisfactory results of collapse treatments, and also in the course of transient pleural complications. It diminishes from propagation of tuberculosis, development of new parenchymal lesions and when there are progressive loss of weight, lowering of the general health condition and toxemia. The total lipases of the blood serum and the lipases which are resistant to atoxyl and to quinine follow a parallel behavior in relation to the evolution of pulmonary tuberculosis. The fact shows probable common origin for these types of lipases, which had been considered as having originated in different organic structures. It shows also that the enzymatic action of these types of lipases is identical.

Revista de la Asoc. Méd. Argentina, Buenos Aires

53: 175-242 (April 15) 1939. Partial Index

Primary Infection and Reinfection from Tuberculosis in Adolescents and Adults. E. Sergent.—p. 181.
Recurrent Spontaneous Meningeal Hemorrhage: Recovery Without Sequels; Case. A. Casaubón and L. M. Cucullu.—p. 185.
*Chancre of Tonsils. F. Cora Eliseht and A. Agüero.—p. 221.

Early Chancre of Tonsils.—Cora Eliseht and Agüero state that chancre on the tonsils is rare. An early diagnosis is of importance because the chancre may show an atypical aspect (owing to the presence of complicating buccopharyngeal infections) and the local lesions are similar to those of Vincent's angina or else to peritonsillar phlegmon. The main clinical characters of early tonsillar chancre are as follows: The lesion is generally unilateral but it may be bilateral. The involved tonsil protrudes in front of the other one with an aspect similar to that of phlegmonous tonsillitis. On palpation it gives the sensation of being a woody structure. Local pain is moderate. The infiltration diffuses from the tonsil to the larynx, uvula and nearby structures. There is adenitis back of the maxillary angle and in the carotid region. Sometimes there is also hypertrophy of the local lymph nodes. The clinical diagnosis is verified sometimes by the appearance of secondary lesions and in all cases by the positive results of serologic tests for syphilis and by the satisfactory results of antisyphilitic treatment. The authors report three cases in women.

Archiv für Gynäkologie, Berlin

168: 545-708 (April 15) 1939

Experimental Studies on Influence of Gonadal Hormones on Motility of Uterine Tubes: Action of Follicular Hormone. A. Binder.—p. 545.
Mortality of Newborn in Institutional Obstetrics. H. Rusch.—p. 556.
Comparison of Delivery in the Home and in the Clinic in Cases of Pelvic Presentation. J. Erbslöh.—p. 578.
Experimental Investigations on Action of Hormone of Anterior Lobe of Hypophysis on Basis of Increase in Weight of Uterus of Infantile Mice. B. Szendi.—p. 594.
Sexual Hormones and Intestinal Function with Special Consideration of Intestinal Atony During Pregnancy. G. Tsutsulopulos.—p. 608.
*Demonstration of Allergic Factors in Pathogenesis of Eclampsia. E. Junghans.—p. 656.
Mutual Intra-Uterine Impairment of Twins. H. Ruhl.—p. 702.

Allergic Factors in Pathogenesis of Eclampsia.—Junghans reviews the literature on the tissue changes in allergic conditions and on the allergic theories of eclampsia and shows that, although many clinicians and pathologists have included eclampsia in the group of allergic conditions, the experimental proof for the allergic character of eclampsia is still to be furnished. It was the author's aim to produce in the liver and kidneys of animals, by means of the serum hyperergy experiment, the tissular changes that are found in these organs in women with eclampsia. On the basis of his experimental studies on animals, he considers it justified to regard the pathologic anatomic aspects of eclampsia also from the point of view of an allergic-hyperergic process and thus interpret the specific organic changes as the manifestation of a tissular hypersensitivity against a still unknown protein product (antigen) which during pregnancy is introduced into the maternal organism by way of the uterine vessels and sensitizes it. To be sure, the author is aware of the fact that this explanation does not solve the problem of eclampsia in its entirety and that it cannot clarify the different clinical symptoms of eclampsia, for instance the convulsions. He thinks that still other factors are of fundamental significance in the pathogenesis of this disorder. The experiments carried out by the author indicate that the serum of eclampsia as well

as the fetal serum must contain a substance that has the action of an antigen. Using these two types of serum in the allergy experiment, he was able to produce especially in pregnant rabbits the hepatic and renal changes that are characteristic for eclampsia, whereas it proved impossible to produce these changes with the serum of healthy pregnant women and with animal serum. In this connection the author cites observations which he made in the course of intracutaneous tests on women with the nephropathy of pregnancy. He observed that during the last months of pregnancy they gave positive reactions in response to intracutaneous vaccination with fetal extract. He thinks that with the necessary reservations this might be regarded as indicative of allergic hyperergic processes in the development of eclampsia.

Archiv für klinische Chirurgie, Berlin

195: 455-610 (April 15) 1939. Partial Index

Facial Plastics. A. Hagentorn.—p. 455.
Epiploitis Plastica. R. von Oppolzer.—p. 489.
Pseudocyst of the Pancreas. W. Klapp.—p. 514.
*Differential Diagnosis Between Pulmonary Cancer and Abscess. W. Peters.—p. 519.
Inorganic Content of Normal, Colloid and Hyperthyroid Thyroid. H. Meltzer and H. Heuser.—p. 543.
Rectal Tribromethanol Basal Narcosis. F. Kaspar.—p. 567.

Pulmonary Cancer and Lung Abscess.—The increase in the incidence of pulmonary cancer created, according to Peters, new diagnostic problems, among which the differentiation of the cancer from a pulmonary abscess is particularly difficult. The author points out some of the difficulties in a discussion of seven cases observed in Sauerbruch's clinic. The recognition of the cancer in its infiltrating stage is now readily accomplished with the aid of tomography. The diagnosis is made much more difficult when the tumor breaks down and forms a cavity. The following symptoms are suggestive of a tumor rather than of an abscess: marked dilatation of the thoracic veins; local edema of the arm, face or a limited area of the skin of the thorax; displacement of heart tones; spontaneous paralysis of the recurrent or the phrenic nerve, rapid refilling of a pleuritic effusion after tapping, and, in particular, stenosis of a bronchus followed by atelectasis. The latter is made recognizable by the narrowing of the intercostal spaces and with the aid of tomography. The differentiation in many cases may be made with the aid of bronchoscopy. The value of tomography, however, is even greater. Exploratory thoracotomy is indicated in cases in which the diagnostic methods mentioned fail to make the differential diagnosis, especially if the patient expectorates large amounts.

Deutsche Zeitschrift für Chirurgie, Berlin

252: 1-144 (April 21) 1939. Partial Index

The Nervous System and the Thyroid. P. Sunder-Plassmann.—p. 1.
*Diagnosis and Treatment of Acute Pancreatic Diseases. H. Griessmann.—p. 19.
Topography of Biliary and Pancreatic Ducts in Relation to Postoperative Pancreatic Fistula. O. Hultén.—p. 41.
Experimental Bone Necrosis Produced by Ingestion in Bone Marrow of Physiologic Solution of Sodium Chloride, Foreign Serum and Homogenous Blood. M. Mennenga.—p. 49.
Intestinal Obstruction: One Hundred and Ninety Cases. H. Gudladt.—p. 94.

Acute Pancreatitis.—According to Griessmann, fifty cases of acute hemorrhagic pancreatitis and thirty cases of acute edema of the pancreas were treated at the Giessen clinic between 1931 and 1937. During a twenty-two year period (1909-1930) Bernhard reported from the same clinic sixty-three cases of acute hemorrhagic pancreatitis and nine cases of acute edema of the pancreas. The author believes that the increase in the cases of acute pancreatic disease from three per annum to seven was due to improved nourishment, since most of his cases were associated with obesity. The author stresses the fact that improvement in the diagnostic methods enables one to make a diagnosis in practically all cases. He further stresses a change in the attitude toward early operative treatment in the cases of acute pancreatic necrosis. Whereas Schmieden in reviewing 1,500 cases of acute pancreatic disease in 1927 urged immediate operation for every case of acute pancreatic disease, Walzel, Nordmann and others pointed out subsequently that this procedure did not reduce the mortality and perhaps even increased it. In the author's sixty-eight cases of acute pancreatic disease in which operation was performed during the quiescent stage, the association with gallstone disease was demonstrated in sixty-four (94.2 per cent). In three fourths of these cases there were small stones, which fact suggests that the gallstone disease was not of long standing. Stones in the common duct were observed in 6.5 per cent of his cases. In the author's series there were 90 per cent women and 10 per cent men. Association between pancreatic disease and a disease of the biliary passages was established in 94.2 per cent of the cases. Daily determination of diastase in the urine proved to be a valuable diagnostic method. A single determination is not reliable. In 20 per cent of the cases there was no increase in the diastase. Determination of fasting blood sugar is of considerable importance in the diagnosis of acute pancreatic disease. The function of the island apparatus of the pancreas is best determined by the dextrose tolerance test. Among other diagnostic methods the author includes the determination of lipase in the blood serum, the leukocyte count, the estimation of urobilin and urobilinogen in the urine, and determination of residual nitrogen in the serum and of albumin in the urine. The employment of all these diagnostic methods makes it possible to arrive at a correct diagnosis in the majority of the cases. The clinic at Giessen has adopted since 1931 a conservative attitude in the treatment of these cases. In this treatment no nourishment of any kind is given, fluids are administered by rectum and circulatory weakness is treated by a 5 per cent dextrose intravenous drip. Atropine is given intravenously to allay the irritability of the vagus nerve and morphine is administered in high doses to control the pain. To prevent recurrences, patients are submitted at a later stage to operative intervention the aim of which is to remove the gallstone disease. The decision in each individual case as to when to operate is determined by the state of the circulation. The average lapse between the onset of the disease and the operation in the author's series was eleven days. The author points out that the mortality rate for Schmieden's series was 51 per cent and for Bernhard's 34 per cent, while in his series it amounted to 13 per cent.

Klinische Wochenschrift, Berlin

18: 453-484 (April 1) 1939. Partial Index

Influence of Ultraviolet Rays on Number of Reticulocytes in Blood. W. Grunke and H. Frommelt.—p. 453.
*Dependence of Action of Estrogenic Hormone on Mammary Gland on Nervous Connection of Hypophysis to Diencephalon. L. Herold and G. Effkemann.—p. 455.
Behavior of Quantity of Blood in Case of Blood Transfusion. U. Wetzel.—p. 456.
Changes in Electrocardiogram Following Work Test While Wearing Gas Mask. H. Zettel and A. Fink.—p. 458.
Quantitative Determination of Vitamin B_1. A. S. von Mallinckrodt-Haupt.—p. 467.
Clinical Examination of Functional Capacity of Lung by Means of Graduated Method. B. Malamos.—p. 468.
Small Apparatus for Determination of Mean Diameter of Erythrocytes. L. Schalm.—p. 470.

Estrogenic Hormone and Nervous Factors.—Herold and Effkemann point out that clinical observations indicate that sympathetic centers and tracts are involved in incretory functions. Conditions like psychogenic amenorrhea, hysterical pregnancy and the development of amenorrhea following the use of narcotics with a central point of attack or following diseases of the diencephalic system induced the authors to investigate the part played by the sympathetic nervous system in the incretory functions of the anterior lobe of the hypophysis. Although there was no longer any doubt that the hypophysis and the diencephalon form a functional unit, there was as yet no definite proof for the involvement of sympathetic centers and tracts in the incretory functions of the anterior lobe of the hypophysis. In recent experiments on rats the authors were able to demonstrate that the administration of estrogen fails to produce indirect reactive luteinization of the ovaries if the treatment is preceded by division of the hypophysial infundibulum; that is, the diencephalon and the hypophysial infundibulum are the nervous tracts that are necessary for the incretory hypophysial function. This observation made it seem likely that the action of the estrogenic hormone on other organs, such as the mammary gland, is subject to the same mechanism and so the authors subjected male and castrated female rats in which the hypophysial infundibulum

had been cut to prolonged administration of estrogen. It was found that the structural changes in the mammary gland, the cystic fibrosis, which is produced by the estrogenic hormone in male animals in the presence of an intact infundibulum, did not develop following division of the infundibulum. This proves that the action of the estrogenic hormone on the mammary structure is not a direct one but takes place by way of the hypophysis and that the hypophysis and the diencephalic system form a functional unit. An incretory stimulus, as it is produced by the estrogenic hormone, influences the diencephalon by humoral means, and from there it is led by nervous channels to the anterior lobe of the hypophysis, where, after its effect has been redirected and the incretory function changed, it determines the morphologic behavior of the mammary gland. Thus it is demonstrated that sympathetic tracts and centers are necessary for the development of physiologic and pathologic growth processes in the mammary gland.

Medizinische Klinik, Berlin

35: 493-532 (April 14) 1939. Partial Index

*Interrelations Between Ovaries and Thyroid Under Influence of Nutritional Factors, Especially of Vitamin E. E. Schneider.—p. 499.
New Therapeutic Methods in Habitual Abortion and Premature Birth. Bickenbach.—p. 501.
Treatment of Chronic Inflammation of Uterine Tubes with Special Consideration of Use of Estrogenic Hormone. C. Clauberg.—p. 504.
Dry or Moist Bandage. G. Schöne.—p. 507.
Individualization in Choice of Anesthetic. J. C. Lehmann.—p. 511.
Significance of Anesthesia for Course of Laparotomy. H. Finsterer. —p. 513.

Interrelations Between Ovaries and Thyroid Under Influence of Vitamin E.—Schneider points out that castration is followed by a reduction in the activity of the thyroid, whereas the administration of estrogen counteracts this reduction. This indicates that the estrogenic hormones not only act on the genital apparatus but also intervene in the general hormonal regulation and exert an influence on the activity of the thyroid. The author further reviews the effect of various types of avitaminoses (A, B, C and D) on the condition of the thyroid and then states that E avitaminosis acts on the thyroid in a similar manner to castration. Moreover, E avitaminosis impairs the ovarian function but apparently does not entirely abolish it. As the chief sources of vitamin E in human foods the author mentions lettuce, vegetable oils, pork fat and butter. In studies on the interrelation between the action of vitamin E, the ovarian hormones and the thyroid he found that, if vitamin E in the form of wheat germ oil is administered simultaneously with estrogen, much smaller quantities of estrogen are effective than is the case otherwise. Thus vitamin E increases the efficacy of estrogen.

Münchener medizinische Wochenschrift, Munich

86: 521-560 (April 7) 1939. Partial Index

Remarks on Lesions of Meniscuses. F. J. Lang.—p. 523.
Fracture of Neck of Femur in Course of Convulsion Therapy of Schizophrenia. R. Müller.—p. 525.
Coffee Charcoal in Diseases of Gastrointestinal Tract and of Biliary Passages. E. Payr.—p. 527.
Roentgenologic Diagnosis of Biliary Passages. K. A. Zwicker.—p. 532.
Foreign Bodies in Pleural Cavity. A. Behrmann.—p. 542.
*Attempt at Crystallographic Diagnosis of Carcinoma. S. Rascher and J. Trumpp.—p. 544.

Crystallographic Diagnosis of Carcinoma.—Rascher and Trumpp assert that, if a solution of copper chloride is put on a glass plate that is free from defects and if the solution is dried within fourteen to eighteen hours, the plate shows a bluish green, more or less dense (depending on the concentration, from 5 to 20 per cent), unevenly distributed crystalline deposit, which is mixed with amorphous and crusted masses. If, however, diluted organic substance, such as blood in distilled water, is added to this deposit, the plates show well shaped crystalline needles. Why living substances act in this manner on the process of crystallization has not been explained as yet, but the fact remains. Even more surprising, but also quite evident, is the fact that the addition of blood from healthy subjects produces an entirely different picture of crystallization than does the addition of blood from patients. Whereas in healthy persons crystallization proceeds in a ray pattern from one point that usually has a slightly eccentric localization, in diseased persons the crystallization presents a decentralized, disorganized picture. The unicentral direction of the crystalline needles is lacking and there are other, independent, centers of crystallization, the radiating bundles of which either are strictly separated from the adjoining ones or partly cover them. The authors say that these observations were made first by Pfeiffer and were corroborated by their own experiments. Pfeiffer maintained also that there are characteristic pictures of crystallization in certain diseases, for instance that a certain cross form characterizes tuberculosis and a wing form carcinoma. After the authors had determined that the picture of crystallization can be influenced by certain protein constituents, they decided to give their attention to the crystallographic aspects of the blood of patients with carcinoma. They examined 246 specimens of human blood. In ninety-eight of these the plates showed no signs of carcinoma and the clinical diagnosis of these cases tallied with the outcome of the crystallographic test. In 148 cases the plates indicated the presence of carcinoma, but in eleven of these this diagnosis proved incorrect, for three of them were definitely free from carcinoma and in eight other cases sarcoma and not carcinoma existed. In nine other cases the clinical diagnosis of carcinoma was still doubtful, but in the other 128 cases the crystallographic diagnosis of carcinoma tallied with the clinical diagnosis. Tests were made also on sixty specimens of animal blood. The crystallographic test gave erroneous results in three of forty animals with carcinoma and in two of twenty animals without carcinoma. The authors think that the cited figures are proof that this method deserves attention. It has the disadvantage that it requires an extremely exact technic and that only fresh blood (at the latest after five hours) can be used.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 1443-1574 (April 1) 1939. Partial Index

Treatment of Acute Malaria: Quinine or Atabrine? A. Siegenbeek van Heukelom.—p. 1447.
Depersonalization, Melancholia and Mania. C. T. van Valkenburg. —p. 1456.
*Psychopathology of Patients with Exophthalmic Goiter. F. Grewel.—p. 1464.
Infection with Clonorchis Sinensis. A. M. W. Hekking.—p. 1471.
Treatment of Apoplexy in Acute Stage of So-Called Spontaneous Meningeal Hemorrhage, Cerebral Hemorrhage, Cerebral Thrombosis and Cerebral Embolism. D. M. van Londen.—p. 1475.

Psychopathology and Exophthalmic Goiter.—Grewel says that serious psychoses of various types may occur in exophthalmic goiter and that even in the absence of typical psychoses certain nervous symptoms generally characterize patients with exophthalmic goiter. Among the latter there is restlessness, with a continuous drive to hurry and with nervous haste in all activities. Even more characteristic is the so-called tension of expectancy regarding everything that has to be done. All psychic processes, including the emotions, are more or less impetuous. The emotions are accompanied by and interwoven with strong physical sensations. The author concludes that the rapidity and impetuous intensity which characterizes the psychopathology of the patients with exophthalmic goiter is the manifestation of the increased metabolism.

Acta Pædiatrica, Stockholm

28: 259-404 (March 31) 1939

Evolutive Curve of Leukocyte Count of Blood During First Year of Life: Comparison Between Children Born at Term and Premature Infants. J. H. Magnusson.—p. 259.
Clinical Experiments on Pathogenesis and Prophylaxis of Dental Caries. I. Jundell and J. Billing.—p. 293.
Investigations on Home Conditions of School Children Who Are of Subnormal Weight. A. Ruotsalainen.—p. 315.
*Prontosil Rubrum in Treatment of Scarlet Fever. J. Ström.—p. 333.
Anemia in Acute Rheumatic Fever During Childhood. G. Gezelius. —p. 361.
Singular Type of Granulomatosis in an Infant. Greta Muhl.—p. 376.
Cases of "Cow's Milk Idiosyncrasy." G. von Sydow.—p. 383.
Winckel's Disease with Recovery: Case. P. H. Fiedeldy Dop.—p. 397.

Prontosil Rubrum in Treatment of Scarlet Fever.—Ström mentions several investigators who tried sulfanilamide preparations in scarlet fever and then reports his own observations. He began the treatment with prontosil rubrum in the early part of 1937 and continued it until the early part of 1938. The substance was used only in cases of pharyngogenic scarlatina, not in surgical or puerperal scarlatina, and only in

those cases which were uncomplicated at the time of hospitalization. The prontosil rubrum was administered to every second patient with scarlatina who entered the hospital, the other patients serving as controls. In patients in whom the fever was extremely high and in whom the general condition was greatly impaired serum therapy was employed, either in the form of an antitoxic serum or of convalescent serum. Prontosil rubrum was given also to every second one of the patients receiving serum therapy. Thus there were four groups of patients: a prontosil group and a control group, a serum-prontosil group and a serum-control group. The first two groups comprised 100 cases each, the last two twenty-two cases each. Thus 122 patients received prontosil and 122 did not. Adults and children over 10 years of age were given three times daily one tablet, children between 3 and 10 years of age were given three times daily one-half tablet and children less than 3 years of age were given three times daily one-fourth tablet. Summarizing the effects produced by the prontosil, the author says that the fever period was shorter in the patients treated with prontosil. Of the patients who remained free from complications during their entire stay at the hospital, the prontosil group showed a more rapid return to normal sedimentation values than did the group not treated with prontosil. The incidence of complications was reduced by one third in the patients who had been treated with prontosil. Those complications which are the result of general toxic effects were not reduced in the patients receiving prontosil, but only the local inflammatory complications of the pharyngeal infection. The relapses (one among the prontosil group and eight among the others) as well as the late complications, in which new exogenic infections probably play a part, were less frequent among the patients who received prontosil therapy. The length of hospitalization was shorter with prontosil treatment than without it. Thus it may be said that treatment with prontosil shortened the duration of primary scarlet fever, reduced the frequency of complications and probably also conferred some protection against new exogenic infections. Secondary toxic effects of prontosil were slight in this material, probably because comparatively small doses were given.

Nordisk Medicin, Helsingfors

1: 885-964 (March 31) 1939

Hospitalstidende

*Hemopoiesis in Pernicious Anemia. O. Bang.—p. 893.
Studies on Effect of Large Insulin Doses: I. Symptomatology and Blood Sugar. A. Bræstrup.—p. 899.
Id.: II. Interruption of Insulin Coma. A. Bræstrup.—p. 902.
Prognosis in Pleuritis with Special Regard to Significance of Sanocrysin Treatment. K. Secher.—p. 904.
*Resorption of Antipneumococcus Serum After Intravenous, Intraperitoneal and Intramuscular Injection. M. Bjørneboe and J. Clausen.—p. 906.
Colloid Stones. H. Krieger Lassen.—p. 909.

Hemopoiesis in Pernicious Anemia. — Bang maintains that pernicious anemia originates because a principle necessary for the formation of red blood corpuscles or for certain preliminary stages is lacking and the ability of the organism to form blood cells with normal span of life is reduced, causing a degeneration both in the bone marrow and in the peripheral blood. In the marrow there is hyperplasia together with hyperactivity. The "pernicious" organism may recur to an "embryonal" regeneration type, which may help more or less for a time. Megaloblastosis is regarded as the sign of maximal activity. On specific treatment the marrow is supplied with the lacking principle, cells with normal viability are formed and in the main a regeneration sets in like that which would occur in the "not pernicious" organism if it were to meet the deficit in the blood corpuscles. The interval between the start of treatment and the first signs of increase in the peripheral blood represents the time needed for replacing defective cells with normal cells. The permeability of the red blood corpuscles to certain substances, especially dextrose, is increased in untreated pernicious anemia. The permeability changes in marked degree immediately after the start of treatment and may become normal before the rise in blood values begins.

Resorption of Antipneumococcus Serum.—After injection of horse and rabbit antipneumococcus serum in rabbits by intravenous, intraperitoneal or intramuscular routes, Bjørneboe and Clausen followed the concentration of antibodies in the blood by titration of agglutinins. The maximal concentration of antibodies in the blood was reached at once by intravenous injection, after from three to four hours by intraperitoneal injection and after from twenty-four to forty-eight hours by intramuscular injection. Similar conditions of resorption were found in a child aged 4 months in whom in unspecific protein therapy type IV rabbit antipneumococcus serum was injected intravenously, type VI intraperitoneally and type V intramuscularly, one directly after the other. The authors state that, if intravenous injection of antipneumococcus serum is difficult or impossible, intraperitoneal injection may be employed. If the serum is given intramuscularly, the dose must be considerably increased.

1: 805-884 (March 25) 1939

Norsk Magasin for Lægevidenskapen

Sitting-Up Test in Normal Persons. G. H. Monrad-Krohn and R. Sollmann Fischer.—p. 837.
Investigations on Rest Nitrogen and Its Fractions: Methods; Normal Values; Reciprocal Relation of Fractions in Normal and Increased Rest Nitrogen. M. Kobro.—p. 839.
True and False Argyll Robertson Symptom. R. Strømme.—p. 846.
Chemical Transmission of Impulse in Vegetative Nervous System. M. Kobro.—p. 849.
*Vertebral Hemangiomas, with Special Regard to Complications and Roentgenologic Diagnosis. A. Scheel.—p. 854.
Roentgenology of "True" Joint Fissure. T. Krogdahl.—p. 862.
Injection Treatment of Inguinal Hernias. G. Ulland.—p. 867.
Practical Supports for Patients in Operations on Kidney. A. Brekke.—p. 870.

Vertebral Hemangionas. — Scheel says that vertebral hemangiomas, frequently found on anatomic examination, rarely give clinical symptoms. Only thirty-six cases with neurologic symptoms due to vertebral hemangiomas have been reported in the literature, and he adds two personal cases. Compression of the medulla, established in thirty-one cases, was most often caused by hemangioma masses in the epidural space which had broken through the vertebral body or arch. In seven cases the only symptom was pain in the back, in part radiating to the abdomen and lower extremities. The symptoms of compression or pain appeared in both old and young. The youngest patient was 15, the most marked symptoms were felt by patients about 20, and pain as the only symptom was observed in older patients. The neurologic symptoms as a rule begin with weakness in the lower extremities; paresthesia and pain generally follow and walking becomes difficult. A spastic paralysis may develop into a complete paralysis. Often paralysis of the bladder occurs early in the course. Occasionally the condition remains stationary. Usually there is progression in the course of months or years. The outcome is often fatal. In life the diagnosis of vertebral hemangiomas can be made only roentgenologically. The roentgenogram that corresponds to the anatomic condition shows a characteristic coarse-meshed structure. A vertebral hemangioma with neurologic symptoms calls for surgical or radiologic treatment. Operative treatment consists of laminectomy of the affected vertebrae and eventually also removal of the hemangiomatous tissue, which often extends epidurally. Improvement follows in from a few weeks to months. Fifteen patients with vertebral hemangiomas with symptoms of compression were operated on, with recovery or improvement in eight, no change in two and death from hemorrhage from the hemangiomatous tissue in five. Eight patients were given roentgen treatment, with marked improvement in seven and no change in one. Two patients were treated with radium, with marked improvement. According to Liévre, roentgen treatment should be reserved for the milder cases with pain as the only symptom, operative treatment being indicated when there is paralysis of greater degree, in spite of the danger of hemorrhage. The author, however, says that some degree of compression of the medulla was present in four of the cases treated roentgenologically, and he feels that roentgen treatment and especially a powerful radium treatment might well be tried in cases of graver compression, if life is not in immediate danger. His two patients, women aged 73 and 56 with symptoms of pain, had favorable results from radium and roentgen treatment respectively. The cases from the literature are tabulated in detail.